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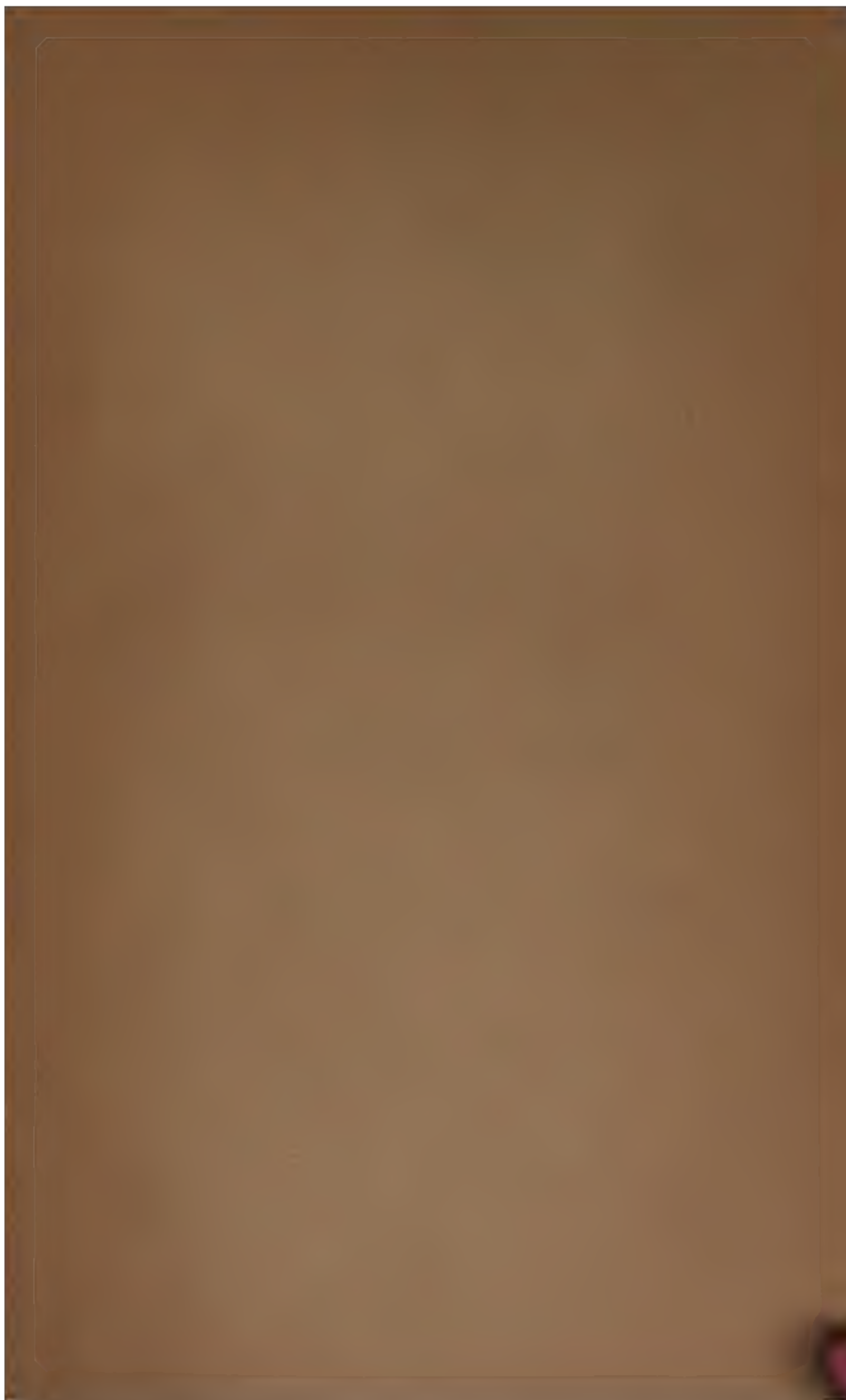
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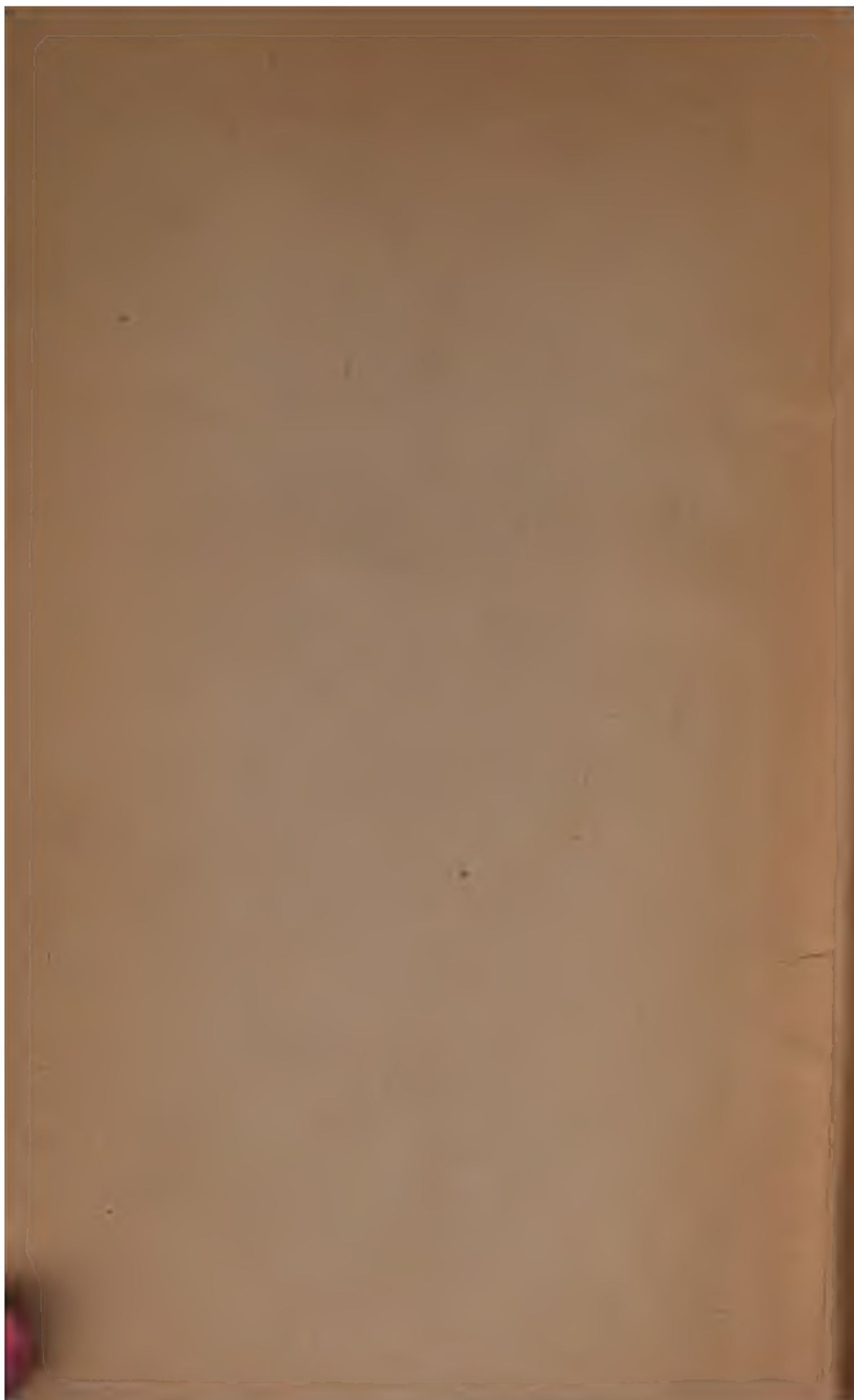
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CATALOGUE  
OF THE  
BIRDS  
IN THE  
BRITISH MUSEUM.

VOLUME XXVI.

LONDON:  
PRINTED BY ORDER OF THE TRUSTEES.  
1898.

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**CATALOGUE**  
**OF THE**  
**PLATALEÆ, HERODIONES, STEGANOPODES,**  
**PYGOPODES, ALCÆ, AND IMPENNES**  
**IN THE**  
**COLLECTION**  
**OF THE**  
**BRITISH MUSEUM.**

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**PLATALEÆ (IBISES AND SPOONBILLS)**

**AND**

**HERODIONES (HERONS AND STORKS),**

**BY**

**R. BOWDLER SHARPE.**

**STEGANOPODES (CORMORANTS, GANNETS, FRIGATE-BIRDS, TROPIC-  
BIRDS, AND PELICANS), PYGOPODES (DIVERS AND GREBS),  
ALCÆ (AUKS), AND IMPENNES (PENGUINS),**

**BY**

**W. R. OGILVIE-GRANT.**

**LONDON:**  
**PRINTED BY ORDER OF THE TRUSTEES.**

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## PREFACE.

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THE present volume, though not numerically the last, has been, owing to various delays in its production, the last to appear. Its publication completes the series, as originally projected by Dr. Günther more than twenty-five years ago. The whole work consists of twenty-seven volumes, and it may fairly claim to be one of the most important aids to the study of Systematic Ornithology which has ever been produced. The first volume appeared in June 1874. The others have followed at intervals averaging rather less than a year. The publication of the work has therefore been very nearly coincident with Dr. Günther's administration of the Zoological Department of the Museum. It is to him that the general arrangement and supervision of the work is due, although each contributor has been allowed a considerable latitude in following his own views as to the details of classification and nomenclature.

It was at first contemplated that Dr. R. Bowdler Sharpe would undertake the whole work, and the first four volumes were completed by him between the years 1872 to 1879. It, however, soon became apparent that continually increasing curatorial duties (which rapidly augmented, in consequence of the inflow of specimens mainly stimulated by the publication of these volumes) required very much of his attention, and notwithstanding the

energy with which he threw himself into the work, it was manifestly impossible for him single-handed to complete the Catalogue within any reasonable time. The assistance of other ornithologists was hence invoked to take up certain groups, to the study of which they had been known to have specially devoted themselves. These were, in the order in which their aid was given, Mr. Henry Seebohm, Dr. H. Gadow, Mr. P. L. Sclater, Mr. O. Salvin, Mr. E. Hartert, Mr. W. R. Ogilvie-Grant, Mr. E. Hargitt, Captain Shelley, Count Salvadori, and Mr. Howard Saunders. The special contributions of each of these authors will be seen in the list of volumes and their contents. Dr. Sharpe, however, did not relinquish his labours on the Catalogue at the end of the fourth volume. Not only did he materially assist in many of the volumes produced under the names of other authors, but for seven more volumes (making eleven altogether) he is entirely, and for two others he is partly, responsible. Some indication of the amount of his share in the whole work may be gained by the statement that out of 11,548 species described in the Catalogue 5181 are contained in Dr. Sharpe's portion, and 6367 in those parts written by the ten other authors. Acknowledgments of the liberal and ready assistance, either by the donation or loan of specimens or communication of information, rendered by numerous ornithologists, both British and foreign, during the progress of the work, will be found in the Prefaces and Introductions to the several volumes.

The Catalogue is based, not only upon the immense collection of birds in the Museum, but also upon all other available material contained in public or private collections, or described in zoological literature. It therefore professes to be a complete list of every bird known at the time of the publication of the volume treating of the group to which it belongs. Under the heading of each species is (1) a copious synonymy: references being given to every mention of it which occurs in standard books or journals. This has been a work of prodigious labour, but it is hoped that, being fairly exhaustive, it

has been done once for all, as far as existing literature is concerned. (2) A full description of the external characters of both sexes, and, as far as possible, all stages of plumage. (3) A general account of the habitat of the species. (4) A list of every individual specimen in the Museum collection, with a statement as to the source from whence it was obtained and its original locality. Besides numerous woodcut illustrations interspersed in the text in many of the volumes, intended to show the principal structural modifications by which the minor groups are distinguished, the work contains altogether three hundred and eighty-seven coloured plates of species which had never been previously figured, or at all events not in an adequate manner. The specimens from which these drawings were made are in almost every case the types of the species, and altogether five hundred and forty have been figured.

The vast increase of material for the study of the subject which has accrued since the commencement of the work may be estimated by the fact that the number of specimens in the Museum has, through the munificent donations of several large collections, notably those of Messrs. F. D. Godman and O. Salvin, A. O. Hume, R. G. Wardlaw-Ramsay, and H. Seebohm, and the acquisition by purchase of others, scarcely less important, increased from about 35,000 in 1872 to nearly 400,000 at the present time. It must be noted, moreover, that this increase has taken place notwithstanding the continual weeding-out of all absolute duplicates. The earlier volumes therefore represent a very inadequate idea, both of the present condition of knowledge of the subject and of the contents of the Museum collection. To remedy this defect it is proposed to issue a Supplement (probably in two volumes) which will contain references to every species described subsequently to the publication of the volume which treats of the group to which it belongs, and also such emendations as the progress of Zoology seems to require. When this is published, it will afford a complete list up to date of all known birds, either described in the Catalogue or elsewhere.



A general Alphabetical Index both of the genera and species contained in all the volumes, including the Supplement, will then only be required to render the large mass of information contained in the work readily accessible.

W. H. FLOWER,  
*Director.*

British Museum (Natural History),  
September 30, 1898.

## INTRODUCTION.

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Owing to my temporary illness in 1896 and 1897, I found it impossible, amidst the press of other official work, to write the whole of the present volume, and the description of the last four Orders has, therefore, been undertaken by my colleague, Mr. W. R. Ogilvie-Grant, who wrote part of the seventeenth and the whole of the twenty-second volume of the 'Catalogue of Birds.'

The delay in the production of this final volume of the 'Catalogue' is much to be regretted, but has been unavoidable, and I rejoice to see the completion of the work which I commenced twenty-six years ago. In 1872 the collection of ornithological specimens could not have been more than 35,000 in number, and the series now in the British Museum is about 350,000 skins of birds and 50,000 eggs. This increase is principally due to the donations of Mr. Allan Hume, Messrs. Salvin and Godman, Major Wardlaw-Ramsay, the late Mr. Seebohm, Colonel Biddulph, and Dr. W. T. Blanford; but amongst other notable collections acquired by the Museum during the past twenty-six years may be mentioned the following:—

The Wallace Collection (Malayan).

The Sclater Collection (American).

The Shelley Collection (African).

The Sharpe Collection (African).

The Gould Collection (General).

The Gould Collection (Humming-birds).

There are also a number of smaller collections of great value which have been presented to the Museum or purchased by it.

The species of *Plataleæ* described in the present volume are 33 in number, of which all but 2 are in the Collection.

120 species of *Herodiones* have been described, only 4 of which are wanting in the Museum cabinets.

28 types belonging to these two groups are also recorded.

Besides the collections specially mentioned above, I have received assistance in the present work from the following friends, nearly all of whom have given valuable donations to the Museum :—

The late Lord Lilford, Hon. Walter Rothschild (whose collection has always been at our disposal for comparison), Sir H. H. Johnston, K.C.B., Consul Alfred Sharpe, C.B., and the following gentlemen :—Ernst Hartert, W. D. Cumming, E. W. Oates, Howard Saunders, F. J. Jackson, J. J. Quelch, F. C. McConnell, Surgeon-Colonel Jayakar, Surgeon-Captain R. H. Penton, Charles Hose, J. La Touche, C. B. Rickett, F. W. Styan, Rev. H. H. Slater, Alex. Fry, and Colonel Swinhoe.

R. BOWDLER SHARPE.

British Museum (N. H.),  
October 6, 1898.



## INTRODUCTION.

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THE task of completing this volume was placed in my hands in April 1897; the Orders then remaining to be catalogued being the *Steganopodes*, *Pygopodes*, *Alcæ*, and *Impennes*. It is to be regretted that the many departmental duties demanding constant attention have greatly retarded the completion of the present work.

The *Steganopodes*, comprising the Cormorants, Darters, Gannets, Frigate-Birds, Tropic-Birds, and Pelicans, include 72 species. Of these only three species are not represented in the British Museum Collection; two of this number, recently described from the Galapagos Islands and neighbouring seas, will be found in the 'Addenda' (p. 655).

Two species, *Phalacrocorax stewarti* (p. 385) and *Phaëthon americanus* (p. 456), are described for the first time.

Of the *Pygopodes* (Divers and Grebes), *Alcæ* (Auks and Puffins), and *Impennes* (Penguins), only one of the 73 species is not represented in the National collection.

I have been obliged to add one new generic name, *Micruria* (see p. 594), for two small species of Guillemot.

In addition to the splendid material to be found in the British Museum, I have examined the fine series representing the above Orders in Mr. Rothschild's Museum at Tring, as well as numerous types and specimens contained in other Museums and private collections, and kindly forwarded for examination.

I have to return my best thanks to numerous friends for assistance of various kinds. I wish particularly to mention Prof. R. Collett, Dr. H. O. Forbes, Mr. E. Hartert, Prof. F. W. Hutton, Lord Kensington, Mr. E. W. Oates, the late Sir John Campbell-Orde,

Mr. W. P. Pycraft, Hon. Walter Rothschild, Count Salvadori, Mr. G. A. St. Quintin, and Mr. J. I. S. Whitaker.

The same symbols are employed as have been customary in the previous volumes of the "Catalogue." "[P.]" means "Presented by"; "[C.]" equals "Collected by"; "[E.]" signifies "Received in Exchange."

W. R. OGILVIE-GRANT.

Brit. Mus., N.H.,  
6th October, 1898.

# SYSTEMATIC INDEX.

## Order XV. PLATALEÆ.

### Fam. I. IBIDIDÆ.

|                                                | Page     |
|------------------------------------------------|----------|
| 1. <i>Ibis</i> , <i>Cuv.</i> .....             | 4        |
| 1. <i>æthiopica</i> ( <i>Lath.</i> ) ..        | 4, 264   |
| 2. <i>bernieri</i> , <i>Bp.</i> .....          | 7        |
| 3. <i>melanocephala</i> ( <i>Lath.</i> ) ..    | 7        |
| 4. <i>abbotti</i> , <i>Ridgw.</i> .....        | 264      |
| 5. <i>molucca</i> , <i>Cuv.</i> .....          | 9        |
| 2. <i>Carphibis</i> , <i>Reichenb.</i> ....    | 11       |
| 1. <i>spinipectus</i> ( <i>Jameson</i> ) ..    | 11       |
| 3. <i>Inocotis</i> , <i>Reichenb.</i> ....     | 12       |
| 1. <i>papillosus</i> ( <i>Temm.</i> ) ..       | 12, 264  |
| 4. <i>Graptiocephalus</i> , <i>Elliot</i> ..   | 14       |
| 1. <i>davisoni</i> , <i>Hume</i> ....          | 14       |
| 4 a. <i>Thaumatibis</i> , <i>Elliot</i> .      |          |
| 1. <i>gigantea</i> , <i>Oust.</i> ..           | 14, note |
| 5. <i>Nipponia</i> , <i>Reichenb.</i> ....     | 15       |
| 1. <i>nippon</i> ( <i>Temm.</i> ) ..           | 15, 265  |
| 6. <i>Comatibis</i> , <i>Reichenb.</i> ....    | 16       |
| 1. <i>comata</i> ( <i>Ehrenb.</i> ) ..         | 16, 265  |
| 7. <i>Geronticus</i> , <i>Wagl.</i> ..         | 17       |
| 1. <i>calvus</i> ( <i>Bodd.</i> ) .....        | 17       |
| 8. <i>Bostrychia</i> , <i>Reichenb.</i> ....   | 18       |
| 1. <i>carunculata</i> , <i>Rüpp.</i> ..        | 18       |
| 9. <i>Hagedashia</i> , <i>Bp.</i> .....        | 19       |
| 1. <i>hagedash</i> ( <i>Lath.</i> ) ..         | 19, 265  |
| 10. <i>Theristicus</i> , <i>Wagl.</i> .....    | 21       |
| 1. <i>melanopus</i> ( <i>Gm.</i> ) ..          | 21, 265  |
| 2. <i>caudatus</i> ( <i>Bodd.</i> ) ..         | 23, 265  |
| 11. <i>Molybdophanes</i> , <i>Reichenb.</i> .. | 24       |
| 1. <i>cærulescens</i> ( <i>Vieill.</i> ) ..    | 24, 265  |
| 12. <i>Harpiprion</i> , <i>Wagl.</i> .....     | 25       |
| 1. <i>cayenneensis</i> ( <i>Gm.</i> ) ..       | 25, 265  |
| 13. <i>Phimosus</i> , <i>Wagl.</i> .....       | 26       |
| 1. <i>infuscatus</i> ( <i>Licht.</i> ) ..      | 26       |
| 14. <i>Lophotibis</i> , <i>Reichenb.</i> ....  | 27       |
| 1. <i>cristata</i> ( <i>Bodd.</i> ) ..         | 27, 266  |

|                                             |         |
|---------------------------------------------|---------|
| 15. <i>Cercibis</i> , <i>Wagl.</i> .....    | 28      |
| 1. <i>oxycerca</i> ( <i>Spir.</i> ) .....   | 28      |
| 16. <i>Plegadis</i> , <i>Kaup</i> .....     | 29      |
| 1. <i>falcinellus</i> ( <i>Linn.</i> ) ..   | 29, 266 |
| 2. <i>guarauna</i> ( <i>Linn.</i> ) ..      | 34, 266 |
| 3. <i>ridgwayi</i> ( <i>Allen</i> ) ..      | 37, 266 |
| 17. <i>Lamprbis</i> , <i>Elliot</i> .....   | 33      |
| 1. <i>rara</i> , <i>R., H., &amp; K.</i> .. | 39, 266 |
| 18. <i>Eudocimus</i> , <i>Wagl.</i> .....   | 39      |
| 1. <i>albus</i> ( <i>Linn.</i> ) .....      | 39, 266 |
| 2. <i>ruber</i> ( <i>Linn.</i> ) .....      | 41, 267 |

### Fam. II. PLATALEIDÆ.

|                                               |         |
|-----------------------------------------------|---------|
| 1. <i>Platalea</i> , <i>Linn.</i> .....       | 43      |
| 1. <i>leucorodia</i> , <i>Linn.</i> ..        | 44, 267 |
| 2. <i>regia</i> , <i>Gould</i> .....          | 47      |
| 3. <i>alba</i> , <i>Scop.</i> .....           | 49      |
| 4. <i>minor</i> , <i>Temm. &amp; Schl.</i> .. | 50      |
| 2. <i>Platibis</i> , <i>Bp.</i> .....         | 51      |
| 1. <i>flavipes</i> , <i>Gould</i> .....       | 51      |
| 3. <i>Ajaja</i> , <i>Reichenb.</i> .....      | 52      |
| 1. <i>ajaja</i> ( <i>Linn.</i> ) .....        | 52      |

## Order XVI. HERODIONES.

### Fam. I. ARDEIDÆ.

|                                           |         |
|-------------------------------------------|---------|
| 1. <i>Phoyx</i> , <i>Stejn.</i> .....     | 60      |
| 1. <i>purpurea</i> ( <i>Linn.</i> ) ..    | 60, 267 |
| 2. <i>manillensis</i> ( <i>Meyen</i> ) .. | 63, 267 |
| 2. <i>Ardea</i> , <i>Linn.</i> .....      | 66      |
| a. <i>wurdeimanni</i> , <i>Baird</i>      |         |
|                                           | 80, 269 |
| b. <i>wardi</i> , <i>Ridgw.</i> ..        | 80, 269 |
| 1. <i>goliath</i> , <i>Cretzschm.</i> ..  | 66, 268 |
| 2. <i>sumatrana</i> , <i>Raffl.</i> ..    | 68, 268 |
| 3. <i>insignis</i> , <i>Hume</i> ....     | 70, 268 |

|                                                       | Page     |                                                    | Page     |
|-------------------------------------------------------|----------|----------------------------------------------------|----------|
| 4. humbloti, <i>Milne-Edw.</i>                        |          | 16. Nycticorax, <i>Rafin.</i> . . . . .            | 145      |
| & <i>Grandid.</i> . . . . .                           | 70       | 1. nycticorax ( <i>Linn.</i> )                     | 146, 275 |
| 5. melanocephala, <i>Vigors</i>                       |          | 2. tayazu-guira ( <i>Vieill.</i> )                 | 155, 275 |
| & <i>Childr.</i> . . . . .                            | 70, 268  | 3. cyanocephalus ( <i>Molina</i> )                 | 156, 276 |
| 6. cocoi, <i>Linn.</i> . . . . .                      | 72, 268  | 4. leuconotus ( <i>Wagl.</i> )                     | 157, 276 |
| 7. cinerea, <i>Linn.</i> . . . . .                    | 74, 268  | 5. caledonicus ( <i>Gm.</i> )                      | 158, 276 |
| 8. herodias, <i>Linn.</i> . . . . .                   | 80, 269  | a. crassirostris, <i>Vig.</i>                      | 161, 276 |
| 9. occidentalis, <i>Aud.</i> . . . . .                | 84       | 6. mandibularis, <i>Grant</i>                      | 161, 276 |
| 3. Mesophoyx, <i>Sharpe</i> . . . . .                 | 85       | 7. manillensis, <i>Vig.</i> . . . . .              | 162, 276 |
| 1. intermedia ( <i>Hasselt</i> )                      | 85, 269  | 17. Cancroma, <i>Linn.</i> . . . . .               | 163      |
| 2. brachyrhyncha ( <i>Brehm</i> )                     | 87, 269  | 1. cochlearia, <i>Linn.</i> . . . . .              | 163      |
| 3. plumifera ( <i>Gould</i> ) . . . . .               | 87, 270  | 2. zeledoni, <i>Ridgw.</i> . . . . .               | 165      |
| 4. Herodias, <i>Boie</i> . . . . .                    | 88       | 18. Gorsachius, <i>Bp.</i> . . . . .               | 166      |
| 1. alba ( <i>Linn.</i> ) . . . . .                    | 90, 270  | 1. melanolophus ( <i>Raffl.</i> )                  | 166, 277 |
| 2. egretta ( <i>Wils.</i> ) . . . . .                 | 95, 270  | 2. goisagi ( <i>Temm.</i> ) . . . . .              | 169, 277 |
| 3. timoriensis ( <i>Less.</i> ) . . . . .             | 98, 270  | 19. Syrigma, <i>Ridgw.</i> . . . . .               | 170      |
| 5. Florida, <i>Baird</i> . . . . .                    | 100      | 1. sibilatrix ( <i>Temm.</i> )*                    | 170, 277 |
| 1. cærulea ( <i>Linn.</i> ) . . . . .                 | 100, 271 | 20. Pilerodius, <i>Bp.</i> . . . . .               | 171      |
| 6. Melanophoyx, <i>Sharpe</i> . . . . .               | 104      | 1. pileatus ( <i>Bodd.</i> ) . . . . .             | 171, 277 |
| 1. ardesiaca ( <i>Wagl.</i> ) . . . . .               | 104, 271 | 21. Butorides, <i>Blyth</i> . . . . .              | 172      |
| 2. vinaceigula, <i>Sharpe</i>                         | 105, 271 | 1. atricapilla ( <i>Afz.</i> )                     | 172, 277 |
| 7. Dichromanassa, <i>Ridgw.</i> . . . . .             | 106      | 2. brevipes ( <i>Hempr. &amp; Ehr.</i> ) . . . . . | 278      |
| 1. rufa ( <i>Bodd.</i> ) . . . . .                    | 106, 271 | 3. striata ( <i>Linn.</i> ) . . . . .              | 175, 279 |
| 8. Notophoyx, <i>Sharpe</i> . . . . .                 | 109      | 4. robinsoni, <i>Ridgw.</i> . . . . .              | 279      |
| 1. novæ hollandiæ ( <i>Lath.</i> )                    | 109, 271 | 5. javanica ( <i>Horsf.</i> ) . . . . .            | 177, 279 |
| 2. pacifica ( <i>Lath.</i> ) . . . . .                | 111, 271 | a. amurensis ( <i>Schr.</i> )                      | 181, 279 |
| 3. flavirostris, <i>Sharpe</i> *                      | 112, 271 | β. spodiogaster, <i>Sharpe</i>                     | 182      |
| 4. aruensis ( <i>Gray</i> ) . . . . .                 | 113, 272 | 6. stagnatilis ( <i>Gould</i> )                    | 183, 280 |
| 9. Lepterodius, <i>Heine &amp; Reichen.</i> . . . . . | 114      | 7. sundevalli, <i>Reichen.</i>                     | 185, 280 |
| 1. gularis ( <i>Bosc</i> ) . . . . .                  | 114, 272 | 8. virescens ( <i>Linn.</i> ) . . . . .            | 186, 280 |
| 2. asha ( <i>Sykes</i> ) . . . . .                    | 116, 272 | 9. anthonyi, <i>Mearns</i> . . . . .               | 280      |
| 10. Garzetta, <i>Kaup</i> . . . . .                   | 118      | 22. Tigrornis, <i>Sharpe</i> . . . . .             | 191      |
| 1. garzetta ( <i>Linn.</i> ) . . . . .                | 118, 272 | 1. leucolopha ( <i>Jard.</i> )                     | 191, 281 |
| 2. nigripes ( <i>Temm.</i> )                          | 122, 273 | 23. Zonerodius, <i>Salvad.</i> . . . . .           | 192      |
| 11. Leucophoyx, <i>Sharpe</i> . . . . .               | 124      | 1. heliosylus ( <i>Less.</i> ) . . . . .           | 192      |
| 1. candidissima ( <i>Gm.</i> )                        | 124, 273 | 24. Tigrisoma, <i>Swains.</i> . . . . .            | 193      |
| 12. Hydranassa, <i>Baird</i> . . . . .                | 126      | 1. lineatum ( <i>Bodd.</i> ) . . . . .             | 194, 281 |
| 1. tricolor ( <i>P. L. S. Müll.</i> )                 | 126, 273 | 2. marmoratum ( <i>Vieill.</i> )                   | 195, 281 |
| 2. ruficollis ( <i>Gosse</i> ) . . . . .              | 127, 274 | 3. bahiæ, <i>Sharpe</i> . . . . .                  | 196, 281 |
| 13. Nyctanassa, <i>Stejn.</i> . . . . .               | 130      | 4. fasciatum, <i>Such</i> . . . . .                | 196, 281 |
| 1. violacea ( <i>Linn.</i> ) . . . . .                | 130, 274 | 5. salmoni, <i>Scl. &amp; Salv.</i>                | 197, 281 |
| 2. pauper ( <i>Scl. &amp; Salv.</i> )                 | 134, 274 | 25. Heterocnus, <i>Sharpe</i> . . . . .            | 198      |
| 14. Agamia, <i>Reichenb.</i> . . . . .                | 135      | 1. cabanisi ( <i>Heine</i> ) . . . . .             | 198, 281 |
| 1. agami ( <i>Gm.</i> ) . . . . .                     | 135, 274 |                                                    |          |
| 15. Demiegretta, <i>Blyth</i> . . . . .               | 136      |                                                    |          |
| 1. sacra ( <i>Gm.</i> ) . . . . .                     | 137, 274 |                                                    |          |

\* See Addenda, p. 654.

|                                               | Page     |
|-----------------------------------------------|----------|
| 26. <i>Erythrocnus</i> , Sharpe . . . . .     | 200      |
| 1. <i>rufiventris</i> (Sundev.) . . . . .     | 200      |
| 27. <i>Ardeola</i> , Boie . . . . .           | 201      |
| 1. <i>ralloides</i> (Scop.) . . . . .         | 202, 281 |
| 2. <i>idæ</i> (Hartl.) . . . . .              | 206, 282 |
| 3. <i>grayi</i> (Sykes) . . . . .             | 207, 282 |
| 4. <i>bacchus</i> (Bp.) . . . . .             | 211, 282 |
| 5. <i>speciosa</i> (Horsf.) . . . . .         | 212      |
| 28. <i>Bubulcus</i> , Bp. . . . .             | 213      |
| 1. <i>lucidus</i> (Rafn.) . . . . .           | 213, 282 |
| 2. <i>coromandus</i> (Bodd.) . . . . .        | 217, 282 |
| 29. <i>Ardetta</i> , Gray . . . . .           | 220      |
| 1. <i>minuta</i> (Linn.) . . . . .            | 222, 283 |
| 2. <i>podicipes</i> (Bp.) . . . . .           | 225, 283 |
| 3. <i>sinensis</i> (Gm.) . . . . .            | 227, 283 |
| 4. <i>exilis</i> (Gm.) . . . . .              | 231, 284 |
| 5. <i>neoxena</i> , Cory . . . . .            | 233, 284 |
| 6. <i>erythromelas</i> (Vieill.) . . . . .    | 234, 284 |
| 7. <i>pusilla</i> (Vieill.) . . . . .         | 234      |
| 8. <i>involucris</i> (Vieill.) . . . . .      | 235, 284 |
| 9. <i>cinnamomea</i> (Gm.) . . . . .          | 236, 284 |
| 30. <i>Zebrilus</i> , Bp. . . . .             | 241      |
| 1. <i>pumilus</i> (Bodd.) . . . . .           | 241      |
| 31. <i>Nannocnus</i> , Stejn. . . . .         | 242      |
| 1. <i>eurythmus</i> (Swinh.) . . . . .        | 242, 285 |
| 32. <i>Ardeirallus</i> , Sharpe . . . . .     | 244      |
| 1. <i>sturmi</i> (Wagl.) . . . . .            | 244      |
| 33. <i>Dupetor</i> , Heine & Reichen. . . . . | 246      |
| 1. <i>flavicollis</i> (Lath.) . . . . .       | 247, 285 |
| 2. <i>gouldi</i> (Bp.) . . . . .              | 249      |
| 3. <i>nesophilus</i> (Sharpe) . . . . .       | 250      |
| 4. <i>melas</i> (Salvad.) . . . . .           | 251      |
| 34. <i>Erythrophox</i> , Sharpe . . . . .     | 252      |
| 1. <i>woodfordi</i> (Grant) . . . . .         | 252      |
| 2. <i>prætermissa</i> (Sharpe) . . . . .      | 253      |
| 35. <i>Botaurus</i> , Briss. . . . .          | 253      |
| 1. <i>stellaris</i> (Linn.) . . . . .         | 253, 285 |
| 2. <i>capensis</i> (Schl.) . . . . .          | 257      |
| 3. <i>pæciloptilus</i> (Wagl.) . . . . .      | 258, 286 |
| 4. <i>lentiginosus</i> (Mont.) . . . . .      | 259, 286 |
| 5. <i>pinnatus</i> (Licht.) . . . . .         | 262      |
| Fam. II. BALÆNICIPITIDÆ.                      |          |
| 1. <i>Balæniceps</i> , Gould . . . . .        | 287      |
| 1. <i>rex</i> , Gould . . . . .               | 287      |
| Fam. III. SCOPIDÆ.                            |          |
| 1. <i>Scopus</i> , Gm. . . . .                | 288      |
| 1. <i>umbretta</i> , Gm. . . . .              | 288      |

## Fam. IV. CICONIIDÆ.

### Sub-family CICONINÆ.

|                                          |     |
|------------------------------------------|-----|
| 1. <i>Abdimia</i> , Bp. . . . .          | 292 |
| 1. <i>abdimii</i> (Licht.) . . . . .     | 292 |
| 2. <i>Dissura</i> , Cab. . . . .         | 294 |
| 1. <i>episcopus</i> (Bodd.) . . . . .    | 294 |
| 3. <i>Euxenura</i> , Ridgw. . . . .      | 297 |
| 1. <i>maguari</i> (Gm.) . . . . .        | 297 |
| 4. <i>Ciconia</i> , Briss. . . . .       | 298 |
| 1. <i>ciconia</i> (Linn.) . . . . .      | 299 |
| 2. <i>boyciana</i> , Swinh. . . . .      | 302 |
| 3. <i>nigra</i> (Linn.) . . . . .        | 303 |
| 5. <i>Anastomus</i> , Bonn. . . . .      | 306 |
| 1. <i>oscitans</i> (Bodd.) . . . . .     | 306 |
| 2. <i>lamelligerus</i> , Temm. . . . .   | 308 |
| 6. <i>Xenorhynchus</i> , Bp. . . . .     | 310 |
| 1. <i>asiaticus</i> (Lath.) . . . . .    | 310 |
| 7. <i>Ephippiorhynchus</i> , Bp. . . . . | 312 |
| 1. <i>senegalensis</i> (Shaw) . . . . .  | 312 |
| 8. <i>Mycteria</i> , Linn. . . . .       | 314 |
| 1. <i>americana</i> , Linn. . . . .      | 314 |
| 9. <i>Leptoptilus</i> , Less. . . . .    | 315 |
| 1. <i>dubius</i> (Gm.) . . . . .         | 315 |
| 2. <i>javanicus</i> (Horsf.) . . . . .   | 317 |
| 3. <i>crumeniferus</i> (Less.) . . . . . | 319 |

### Sub-family TANTALINÆ.

|                                            |     |
|--------------------------------------------|-----|
| 10. <i>Tantalus</i> , Linn. . . . .        | 321 |
| 1. <i>loculator</i> , Linn. . . . .        | 321 |
| 11. <i>Pseudotantalus</i> , Ridgw. . . . . | 323 |
| 1. <i>leucocephalus</i> (Forst.) . . . . . | 323 |
| 2. <i>cinereus</i> (Raffles) . . . . .     | 326 |
| 3. <i>ibis</i> (Linn.) . . . . .           | 327 |

## Order XVII. STEGANOPODES.

### Fam. I. PHALACROCORACIDÆ.

#### Sub-family I. PHALACROCORACINÆ.

|                                                    |     |
|----------------------------------------------------|-----|
| 1. <i>Phalacrocorax</i> , Brisson . . . . .        | 330 |
| 1. <i>carbo</i> (Linn.) . . . . .                  | 340 |
| 2. <i>filamentosus</i> (Temm. & Schleg.) . . . . . | 350 |
| 3. <i>lucidus</i> (Licht.) . . . . .               | 351 |
| 4. <i>capensis</i> (Sparrm.) . . . . .             | 352 |
| 5. <i>gaimardi</i> (Garnot) . . . . .              | 353 |
| 6. <i>punctatus</i> (Sparrm.) . . . . .            | 354 |
| 7. <i>featherstoni</i> , Buller . . . . .          | 356 |
| 8. <i>perspicillatus</i> , Pallas . . . . .        | 357 |

|                                              | Page |
|----------------------------------------------|------|
| 9. <i>bicristatus</i> , Pallas . . . . .     | 358  |
| 10. <i>pelagicus</i> , Pallas . . . . .      | 360  |
| 11. <i>penicillatus</i> (Brandt) . . . . .   | 363  |
| 12. <i>graculus</i> (Linn.) . . . . .        | 364  |
| <i>a. desmaresti</i> , Pay-raud. . . . .     | 368  |
| 13. <i>chalconotus</i> (G. R. Gr.) . . . . . | 369  |
| 14. <i>auritus</i> (Lesson) . . . . .        | 370  |
| <i>a. cincinatus</i> (Brandt) . . . . .      | 373  |
| 15. <i>neglectus</i> (Wahlberg) . . . . .    | 374  |
| 16. <i>fuscicollis</i> , Steph. . . . .      | 375  |
| 17. <i>sulcirostris</i> (Brandt) . . . . .   | 376  |
| 18. <i>vigua</i> (Vieill.) . . . . .         | 378  |
| <i>a. mexicanus</i> (Brandt) . . . . .       | 381  |
| 18 <i>a. harrisi</i> , Rothschild . . . . .  | 654  |
| 19. <i>carunculatus</i> (Gmel.) . . . . .    | 384  |
| 20. <i>onslowi</i> , Forbes . . . . .        | 385  |
| 21. <i>stewarti</i> , Grant . . . . .        | 385  |
| 22. <i>colensoi</i> , Buller . . . . .       | 386  |
| 23. <i>campbelli</i> , Filhol . . . . .      | 387  |
| 24. <i>bougainvillii</i> (Lesson) . . . . .  | 387  |
| 25. <i>magellanicus</i> (Gmel.) . . . . .    | 388  |
| 26. <i>atriceps</i> , King . . . . .         | 390  |
| 27. <i>albiventer</i> (Lesson) . . . . .     | 392  |
| 28. <i>verrucosus</i> (Cab.) . . . . .       | 393  |
| 29. <i>varius</i> (Gmel.) . . . . .          | 394  |
| 30. <i>gouldi</i> (Salvad.) . . . . .        | 396  |
| 31. <i>hypoleucus</i> (Brandt) . . . . .     | 397  |
| 32. <i>melanoleucus</i> (Vieill.) . . . . .  | 398  |
| 33. <i>brevirostris</i> , Gould . . . . .    | 400  |
| 34. <i>javanicus</i> (Horsf.) . . . . .      | 402  |
| 35. <i>pygmæus</i> (Gmel.) . . . . .         | 405  |
| 36. <i>africanus</i> (Gmel.) . . . . .       | 407  |

## Sub-fam. II. PLOTINÆ.

|                                            |     |
|--------------------------------------------|-----|
| 2. <i>Plotus</i> , Linn. . . . .           | 410 |
| 1. <i>rufus</i> , Daudin . . . . .         | 412 |
| 2. <i>melanogaster</i> , Gmel. . . . .     | 414 |
| 3. <i>novæ-hollandiæ</i> , Gould . . . . . | 417 |
| 4. <i>anhinga</i> , Linn. . . . .          | 419 |

## Fam. II. SULIDÆ.

|                                             |     |
|---------------------------------------------|-----|
| 1. <i>Sula</i> , Brisson . . . . .          | 423 |
| 1. <i>bassana</i> (Linn.) . . . . .         | 425 |
| 2. <i>serrator</i> , G. R. Gray . . . . .   | 428 |
| 3. <i>capensis</i> (Licht.) . . . . .       | 429 |
| 4. <i>cyanops</i> (Sundevall) . . . . .     | 430 |
| 5. <i>piscator</i> (Linn.) . . . . .        | 432 |
| 5 <i>a. websteri</i> , Rothschild . . . . . | 655 |
| 6. <i>variegata</i> (Tschudi) . . . . .     | 434 |
| 7. <i>nebouxii</i> , Milne-Edw. . . . .     | 435 |
| 8. <i>sula</i> (Linn.) . . . . .            | 436 |
| 9. <i>brewsteri</i> , Goss . . . . .        | 440 |

## Fam. III. FREGATIDÆ.

|                                       | Page |
|---------------------------------------|------|
| 1. <i>Fregata</i> , Brisson . . . . . | 442  |
| 1. <i>aquila</i> (Linn.) . . . . .    | 443  |
| 2. <i>ariel</i> (Gould) . . . . .     | 447  |

## Fam. IV. PHAETHONTIDÆ.

|                                        |     |
|----------------------------------------|-----|
| 1. <i>Phaëthon</i> , Linn. . . . .     | 450 |
| 1. <i>rubricauda</i> , Bodd. . . . .   | 451 |
| 2. <i>lepturus</i> , Daudin . . . . .  | 453 |
| 3. <i>fulvus</i> , Brandt . . . . .    | 455 |
| 4. <i>americanus</i> , Grant . . . . . | 456 |
| 5. <i>æthereus</i> , Linn. . . . .     | 457 |
| 6. <i>indicus</i> , Hume . . . . .     | 459 |

## Fam. V. PELECANIDÆ.

|                                           |     |
|-------------------------------------------|-----|
| 1. <i>Pelecanus</i> , Linn. . . . .       | 460 |
| 1. <i>onocrotalus</i> , Linn. . . . .     | 462 |
| 2. <i>roseus</i> , Gmel. . . . .          | 466 |
| 3. <i>crispus</i> , Bruch . . . . .       | 468 |
| 4. <i>philippensis</i> , Gmel. . . . .    | 471 |
| 5. <i>rufescens</i> , Gmel. . . . .       | 474 |
| 6. <i>fuscus</i> , Gmel. . . . .          | 475 |
| <i>a. californicus</i> , Ridgw. . . . .   | 478 |
| 7. <i>thagus</i> , Molina . . . . .       | 480 |
| 8. <i>erythrorhynchus</i> , Gmel. . . . . | 481 |
| 9. <i>conspicillatus</i> , Temm. . . . .  | 483 |

## Order XVIII. PYGOPODES.

## Fam. I. COLYMBIDÆ.

|                                           |     |
|-------------------------------------------|-----|
| 1. <i>Colymbus</i> , Linn. . . . .        | 486 |
| 1. <i>septentrionalis</i> , Linn. . . . . | 487 |
| 2. <i>arcticus</i> , Linn. . . . .        | 492 |
| <i>a. pacificus</i> , Lawr. . . . .       | 494 |
| 3. <i>glacialis</i> , Linn. . . . .       | 496 |
| 4. <i>adamsi</i> , G. R. Gray . . . . .   | 500 |

## Fam. II. PODICIPEDIDÆ.

|                                                     |     |
|-----------------------------------------------------|-----|
| 1. <i>Podiceps</i> , Lath. . . . .                  | 502 |
| 1. <i>fluviatilis</i> , Tunstall . . . . .          | 507 |
| <i>a. philippensis</i> (Bonnat.) . . . . .          | 511 |
| 2. <i>capensis</i> , Licht. . . . .                 | 513 |
| 3. <i>tricolor</i> , G. R. Gray . . . . .           | 517 |
| 4. <i>albescens</i> , Blanf. . . . .                | 518 |
| 5. <i>pelzelni</i> , Hartl. . . . .                 | 518 |
| 6. <i>novæ-hollandiæ</i> , Steph. . . . .           | 519 |
| 7. <i>dominicus</i> (Linn.) . . . . .               | 520 |
| 8. <i>poliocephalus</i> , Jardine & Selby . . . . . | 522 |

|                                                             | Page |
|-------------------------------------------------------------|------|
| 9. <i>rufipectus</i> , <i>G. R. Gray</i> ..                 | 523  |
| 10. <i>americanus</i> , <i>Garnot</i> ..                    | 524  |
| 11. <i>rollandi</i> , <i>Quoy &amp; Gaimard</i> ..          | 526  |
| 12. <i>auritus</i> ( <i>Linn.</i> ) ..                      | 527  |
| 13. <i>nigricollis</i> , <i>Brehm</i> ..                    | 532  |
| 14. <i>californicus</i> , <i>Heerm.</i> ..                  | 535  |
| 15. <i>calipareus</i> , <i>Lesson</i> ..                    | 536  |
| <i>a. juninensis</i> , <i>Berlepsch &amp; Stolzm.</i> ..    | 538  |
| 16. <i>taczanowskii</i> , <i>Berlepsch &amp; Stolzm.</i> .. | 538  |
| 17. <i>micropterus</i> , <i>Gould</i> ..                    | 538  |
| 18. <i>griseigena</i> ( <i>Bodd.</i> ) ..                   | 539  |
| <i>a. holboelli</i> , <i>Reinhardt</i> ..                   | 542  |
| 19. <i>cristatus</i> ( <i>Linn.</i> ) ..                    | 544  |
| 2. <i>Æchmophorus</i> , <i>Coues</i> ..                     | 549  |
| 1. <i>major</i> ( <i>Bodd.</i> ) ..                         | 549  |
| 2. <i>occidentalis</i> ( <i>Lawr.</i> ) ..                  | 551  |
| 3. <i>Polilymbus</i> , <i>Less.</i> ..                      | 553  |
| 1. <i>podicipes</i> ( <i>Linn.</i> ) ..                     | 553  |

## Order XIX. ALCÆ.

## Sub-fam. I. ALCINÆ.

|                                              |     |
|----------------------------------------------|-----|
| 1. <i>Plantus</i> , <i>Brünn.</i> ..         | 562 |
| 1. <i>impennis</i> ( <i>Linn.</i> ) ..       | 563 |
| 2. <i>Alca</i> , <i>Linn.</i> ..             | 564 |
| 1. <i>torda</i> , <i>Linn.</i> ..            | 565 |
| 3. <i>Alle</i> , <i>Link</i> ..              | 569 |
| 1. <i>alle</i> ( <i>Linn.</i> ) ..           | 569 |
| 4. <i>Uria</i> , <i>Brisson</i> ..           | 572 |
| 1. <i>troile</i> ( <i>Linn.</i> ) ..         | 573 |
| 2. <i>lomvia</i> ( <i>Pallas</i> ) ..        | 577 |
| 3. <i>grylle</i> ( <i>Linn.</i> ) ..         | 580 |
| 4. <i>mandti</i> , <i>Licht.</i> ..          | 584 |
| 5. <i>columba</i> ( <i>Pallas</i> ) ..       | 586 |
| 6. <i>snowi</i> ( <i>Stejn.</i> ) ..         | 588 |
| 7. <i>carbo</i> ( <i>Pallas</i> ) ..         | 588 |
| 5. <i>Brachyrhamphus</i> , <i>Brandt.</i> .. | 590 |
| 1. <i>marmoratus</i> ( <i>Gmel.</i> ) ..     | 590 |
| 2. <i>perdix</i> ( <i>Pallas</i> ) ..        | 592 |
| 3. <i>brevirostris</i> ( <i>Vigors</i> ) ..  | 593 |
| 6. <i>Micruria</i> , <i>Grant</i> ..         | 594 |
| 1. <i>hypoleuca</i> ( <i>Xantus</i> ) ..     | 594 |
| 2. <i>craveri</i> ( <i>Salvad.</i> ) ..      | 595 |

|                                                |     |
|------------------------------------------------|-----|
| 7. <i>Synthliborhamphus</i> , <i>Brandt</i> .. | 595 |
| 1. <i>antiquus</i> ( <i>Gmel.</i> ) ..         | 596 |
| 2. <i>wumizusume</i> ( <i>Temm.</i> ) ..       | 598 |

## Sub-fam. II. FRATERCULINÆ.

|                                              |     |
|----------------------------------------------|-----|
| 8. <i>Ptychorhamphus</i> , <i>Brandt.</i> .. | 599 |
| 1. <i>aleuticus</i> ( <i>Pallas</i> ) ..     | 599 |
| 9. <i>Symorhynchus</i> , <i>Merrem.</i> ..   | 600 |
| 1. <i>cristatellus</i> , <i>Pallas</i> ..    | 601 |
| 2. <i>pygmæus</i> ( <i>Gmel.</i> ) ..        | 603 |
| 3. <i>pusillus</i> ( <i>Pallas</i> ) ..      | 605 |
| 10. <i>Phaleris</i> , <i>Temm.</i> ..        | 607 |
| 1. <i>psittaculus</i> ( <i>Pallas</i> ) ..   | 607 |
| 11. <i>Cerorhyncha</i> , <i>Bonap.</i> ..    | 609 |
| 1. <i>monocerata</i> ( <i>Pallas</i> ) ..    | 609 |
| 12. <i>Lunda</i> , <i>Pallas</i> ..          | 611 |
| 1. <i>cirrhatta</i> ( <i>Pallas</i> ) ..     | 612 |
| 13. <i>Fratercula</i> , <i>Brisson</i> ..    | 615 |
| 1. <i>arctica</i> ( <i>Linn</i> ) ..         | 616 |
| 2. <i>corniculata</i> ( <i>Naum.</i> ) ..    | 620 |

## Order XX. IMPENNES.

|                                                      |     |
|------------------------------------------------------|-----|
| 1. <i>Aptenodytes</i> , <i>Forst.</i> ..             | 626 |
| 1. <i>forsteri</i> , <i>G. R. Gray</i> ..            | 626 |
| 2. <i>patagonica</i> , <i>Forst.</i> ..              | 627 |
| 2. <i>Pygoscelis</i> , <i>Wagl.</i> ..               | 630 |
| 1. <i>papua</i> ( <i>Forst.</i> ) ..                 | 631 |
| 2. <i>adelise</i> ( <i>Hombr. &amp; Jacq.</i> ) ..   | 632 |
| 3. <i>antarctica</i> ( <i>Forst.</i> ) ..            | 634 |
| 3. <i>Catarrhactes</i> , <i>Brisson</i> ..           | 635 |
| 1. <i>chrysocome</i> ( <i>Forst.</i> ) ..            | 635 |
| 2. <i>pachyrhynchus</i> ( <i>G. R. Gray</i> ) ..     | 638 |
| 3. <i>sclateri</i> ( <i>Buller</i> ) ..              | 640 |
| 4. <i>chrysolophus</i> , <i>Brandt.</i> ..           | 641 |
| 5. <i>schlegeli</i> ( <i>Finsch</i> ) ..             | 643 |
| 4. <i>Megadyptes</i> , <i>Milne-Edw.</i> ..          | 644 |
| 1. <i>antipodum</i> ( <i>Hombr. &amp; Jacq.</i> ) .. | 644 |
| 5. <i>Eudyptula</i> , <i>Bonap.</i> ..               | 645 |
| 1. <i>minor</i> ( <i>Forst.</i> ) ..                 | 646 |
| 2. <i>albosignata</i> , <i>Finsch</i> ..             | 648 |
| 6. <i>Spheniscus</i> , <i>Brisson</i> ..             | 648 |
| 1. <i>demersus</i> ( <i>Linn.</i> ) ..               | 649 |
| 2. <i>humboldti</i> , <i>Meyen</i> ..                | 650 |
| 3. <i>magellanicus</i> ( <i>Forst.</i> ) ..          | 651 |
| 4. <i>mendiculus</i> , <i>Sunder.</i> ..             | 653 |





# CATALOGUE

## OF

# B I R D S.

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THE following table indicates certain of the leading characters by which the birds treated of in the present volume can be differentiated. Further characters will be found under the separate headings of some of the Orders.

|                                                                                    |                          |
|------------------------------------------------------------------------------------|--------------------------|
| <b>A. Palate desmognathous.</b>                                                    |                          |
| <i>a.</i> Nasals schizorhinal .....                                                | <b>PLATALEÆ, p. 1.</b>   |
| <i>b.</i> Nasals holorhinal.                                                       |                          |
| <i>a'.</i> Hallux free, not united to the other toes by a web .....                | [p. 56.                  |
|                                                                                    | <b>HERODIONES,</b>       |
| <i>b'.</i> Hallux united to the other toes by a web .....                          | <b>STEGANOPODES,</b>     |
|                                                                                    | [p. 329.                 |
| <b>B. Palate schizognathous.</b>                                                   |                          |
| <i>c'.</i> Wing-feathers developed into remiges.                                   |                          |
| <i>a''.</i> Cnemial process of tibia produced forward in a remarkable degree ..... | [p. 485.                 |
|                                                                                    | <b>PYGOPODES,</b>        |
| <i>b''.</i> Cnemial process of tibia not produced .....                            | <b>ALCÆ, p. 559.</b>     |
| <i>d'.</i> Wing-feathers not produced into remiges .....                           | <b>IMPENNES, p. 623.</b> |

## Order XV. PLATALEÆ.

Palate desmognathous.  
 Nasals schizorhinal.  
 No basipterygoid processes.  
 Spinal feather-tract not defined on back.  
 Posterior angle of mandible recurved.  
 Occipital foramina present.

Edge of cranium above the orbits truncate, indicating the position of the nasal glands.

Sternum with four posterior notches.

Accessory femoro-caudal muscle present.

Nest in trees or in reed-beds.

Eggs greenish white, with spots, in *Platalea*; in the *Ibididæ*, green, white, or spotted.

*Key to the Families.*

- |                                                                                               |                                   |
|-----------------------------------------------------------------------------------------------|-----------------------------------|
| a. Bill much curved; nasal groove linear and produced nearly to the tip of the bill . . . . . | [p. 2.<br>1. <i>Ibididæ</i> ,     |
| b. Bill flattened, narrow in the middle and widening out into a spoon-shaped end . . . . .    | [p. 43.<br>2. <i>Plataleidæ</i> , |

## Family I. IBIDIDÆ.

*Key to the Genera.*

- |                                                                                                                                                                                        |                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| a. Anterior aspect of tarsus reticulated, with numerous hexagonal scales.                                                                                                              |                       |
| a'. Inner secondaries ornamental, dependent, with the webs of the feathers disconnected; entire head, throat, and neck all round bare . . . . .                                        | 1. IBIS, p. 4.        |
| b'. Inner secondaries ordinary, not ornamental.                                                                                                                                        |                       |
| a''. Entire head bare; throat bare; hind-neck feathered to nape.                                                                                                                       |                       |
| a <sup>3</sup> . With elongated stiffened shafts of a yellow colour on the fore-neck; no nuchal crest; no papillæ on crown . . . . .                                                   | 2. CARPHIBIS, p. 11.  |
| b <sup>3</sup> . Shafts ordinary on the fore-neck.                                                                                                                                     |                       |
| a <sup>4</sup> . No elongated nuchal crest or ruff; throat feathered nearly to end of rami of lower jaw.                                                                               |                       |
| a <sup>5</sup> . Crown covered with papillæ or coral-like granulations . . . . .                                                                                                       | 3. INOCOTIS, p. 12.   |
| b <sup>5</sup> . Crown smooth; no papillæ . . . . .                                                                                                                                    | 4. GRAPTOCEPHALUS,    |
| b <sup>4</sup> . A crest or ruff of elongated feathers on the nape.                                                                                                                    | [p. 14.               |
| c <sup>5</sup> . Throat feathered to chin, the median line of feathers reaching to the level of the end of the rami of the lower jaw; crest-feathers very long and dependent . . . . . | 5. NIPPONIA, p. 15.   |
| d <sup>5</sup> . Entire throat bare.                                                                                                                                                   |                       |
| a <sup>6</sup> . Nuchal crest composed of elongated narrow feathers, greatly developed; head bare.                                                                                     | 6. COMATIBIS, p. 16.  |
| b <sup>6</sup> . Nuchal crest of soft plumes, not greatly elongated; cranium rounded and swollen . . . . .                                                                             | 7. GERONTICUS, p. 17. |

- b''*. Head feathered.
- c'*. Lores feathered; nape very strongly crested; a fleshy wattle in the centre of the throat. . . . . 8. *BOSTRYCHIA*, p. 18.
- d'*. Lores bare; no fleshy wattle in centre of throat.
- c'*. Chin feathered like the throat; some warty papillæ on lores . . . . [p. 19.
- d'*. Chin bare. 9. *HAGEDASHIA*,
- e'*. Forehead feathered.
- c'*. Lores with some warty papillæ.
- a'*. Region of eye bare; sides of chin and upper throat bare; no crest of dependent feathers on nape . . . . 10. *THERISTICUS*, p. 21.
- b'*. Region of eye feathered; sides of chin only bare; a large nuchal crest of lanceolate feathers . . . . . [p. 24.
- d'*. Lores bare, with no warty papillæ; chin and line down sides of throat bare; a slight nuchal crest of metallic plumes . . . . . 11. *MOLYBDOPHANES*,
- f'*. Forehead bare like the lores, both having warty papillæ; no nuchal crest; chin and base of cheeks as well as region of eye bare . . . . . 12. *HARPIPRION*, [p. 25.
- b*. Anterior aspect of tarsus plated, with distinct transverse scales.
- c'*. Head enormously crested; lores and region of the eye bare; chin feathered, extending nearly over the whole of the interramal space . . . . . 13. *PHIMOSUS*, p. 26.
- d'*. Head moderately crested, not very perceptibly.
- c''*. Tail very long, more than half the length of the wing, and exceeding the outstretched feet; lores, region of the eye, as also the chin, upper throat, and sides of throat bare . . . . . 14. *LOPHOTIBIS*, p. 27.
- d''*. Tail short, not half the length of the wing, and exceeded by the outstretched feet.
- e'*. Throat feathered as far as the interramal space; chin only bare; lores and base of cheeks bare, but the latter feathered to beyond the anterior line of the eye.
- e'*. Toes strong, the claws sharp and pointed, that of the middle toe nearly straight . . . . . 15. *CERCIBIS*, p. 28.
- f'*. Toes weaker, the claws small and curved . . . . . 16. *PLEGADIS*, p. 29.
- f'*. Toes weaker, the claws small and curved . . . . . 17. *LAMPTRIBIS*, p. 38.

- f*<sup>3</sup>. Upper throat entirely bare, like the chin; lores, sides of face, space behind and above the eye and forehead bare ..... 18. *EUDOCIMUS*, p. 39.

### 1. IBIS.

|                                                                        | Type.                 |
|------------------------------------------------------------------------|-----------------------|
| <i>Ibis</i> , <i>Curier. Règne An.</i> i. p. 483 (1817).....           | <i>I. æthiopica</i> . |
| <i>Threskiornis</i> , <i>Gray, List Gen. B.</i> , App. p. 13 (1842) .. | <i>I. æthiopica</i> . |

*Range.* Africa generally and Madagascar; India, China, and Japan, as well as the Indo-Malayan Subregion to Australia.

#### *Key to the Species.*

- a.* Head and neck bare. (Adult males and females.)
  - a'*. No elongated plumes on fore-neck.
    - a''*. All the quills broadly tipped with greenish black; ornamental plumes of secondaries with purplish gloss; iris brown .. *æthiopica*, p. 4.
    - b''*. All the quills white; inner secondaries ashy; iris white ..... *bernieri*, p. 7.
  - b'*. With elongated plumes on the fore-neck.
    - c'*. No black tips to primaries; ornamental secondaries pearly grey; inner secondaries not mottled or barred ..... *melanocephala*, p. 7.
    - d'*. Primaries with a broad tip of blue-black; ornamental secondaries black; inner secondaries barred and mottled with purplish black ..... *molucca*, p. 9.
- b.* Head and neck feathered and streaked with black and white. (Young of all species.)

### 1. *Ibis æthiopica*.

- Abou Hannes, *Bruce, Trav. Abyss.* v., App. p. 172, pl. 35 (1790).  
*Tantalus æthiopicus*, *Lath. Ind. Orn.* ii. p. 706 (1790).  
*Numenius ibis*, *Curier, Ann. du Mus.* iv. p. 116, pls. 52-54 (1804);  
*Savign. Hist. Nat. de l'Ibis*, p. 15, pls. 1-3 (1805).  
*Ibis religiosa*, *Curier, Règne Anim.* i. p. 483 (1817); *Vieill. N. Dict. d'Hist. Nat.* xvi. p. 9 (1817); *Temm. Man. d'Orn.* ii. p. 599 (1820, note); *Audouin, Expl. Somm. Planches Hist. de l'Égypte*, p. 301, pl. 7, fig. 1 (1825); *Wagler, Syst. Av.*, *Ibis*, sp. 2, p. 368 (1827);  
*Werner, Atlas. Gralles*, pl. 25 (1827); *Cur. Règne Anim.* i. p. 519 (1829); *Less. Traité*, p. 568 (1831); *Wagler, Isis*, 1832, p. 1231;  
*Rüpp. Neue Wirb., Vög.* p. 49 (1835-40); *Temm. Man. d'Orn.* iv. p. 391 (1840); ? *Nordm. in Démid. Voy. Russ. Mérid.* iii. p. 258 (1840); *Schl. Mus. Pays-Bas*, *Ibis*, p. 12 (1863: Senaar; Nubia; Gold Coast); *Adams, Ibis*, 1864, p. 31; *Kirk, t. c.* p. 334 (Zambesi); *Antin. Cat. descr. Ucc.* p. 107 (1864: Blue Nile);  
*Degl. et Gerbe, Orn. Eur.* ii. p. 326 (1867); *Loche, Expl. Sci. Algér., Ois.* ii. p. 152 (1867); *Sharpe, P. Z. S.* 1871, p. 614 (Cameroons); *Roché, Bull. Soc. Philom.* 1889, pp. 119, 120.  
*Ibis æthiopica*, *Rüpp. Syst. Uebers.* p. 122 (1845); *Vierth. Naum.* 1853, p. 22, 1857, p. 107; *Heugl. Syst. Uebers.* p. 61 (1856); *id. Ibis*, 1859, p. 347 (Isl. of Dahalak; Abyssinian coast); *Gurney, Ibis*, 1860, p. 219 (Natal); *id. Ibis*, 1868, p. 259; *Fritsch, Vög.*

- Eur. tab. 43. fig. 9* (1870); *Finsch & Hartl. Vög. Ostaf. p. 733* (1870: Mozambique); *Scl. P. Z. S. 1870*, pp. 381, 382; *Gurney, in Anders. B. Dam. Ld. p. 297* (1872); *Shelley, B. Egypt, p. 261* (1872); *Heugl. Orn. N.O.-Afr. ii. pt. 1, p. 1135* (1873: C. & S. Nubia; Takah; Senaar; Kordofan; Tana Lake; mouth of Sobat, Jan.); *Antin. & Salvad. Viagy. Bogos, p. 152* (1873: Barka Valley; near Kassala; Gulf of Adulis); *Ayres, Ibis, 1874, p. 105* (Transvaal); *Reichen. J. f. O. 1877, p. 151*; *Elliot, P. Z. S. 1877, p. 485*; *E. C. Taylor, Ibis, 1878, p. 372* (Lake Menzaleh); *Scl. t. c. pp. 449, 451, pl. xii. (breeding)*; *Fischer & Reichen. J. f. O. 1878, p. 248*; *Fischer, t. c. p. 295, 1879, pp. 295, 296*; *Shelley, P. Z. S. 1881, p. 600* (Usambara Hills); *Bocage, Orn. Angola, p. 459* (1881: Rio Coroca; Humbe); *Cory, Beautiful & Curious B. pt. viii. (1882)*; *Butler, Feilden, & Reid, Zool. 1882, p. 423* (Newcastle, Sept.); *W. A. Forbes, Ibis, 1883, p. 534* (Rabba); *Salvad. Ann. Mus. Civic. Genov. (2) i. p. 234* (1884: Lake Cialalaka, Shoa); *Sharpe, ed. Layard's B. S. Afr. p. 736* (1884: Berg R.; Dyer's Isl.; breeding); *Fischer, J. f. O. 1885, p. 117* (Osi-Tana mouth; Wapokomoland); *Symonds, Ibis, 1887, p. 335* (Kroonstadt); *Reichen. J. f. O. 1887, p. 48* (Simiu R.; Victoria Nyanza; E. of Kagehi); *Matschie, t. c. p. 145* (Marungu); *Salvad. Ann. Mus. Civic. Genov. (2) vi. p. 316* (1888: Antoto); *Meyer, Abbild. Vogelsk. pl. 134* (1890); *Reichen. Vög. Deutsch-Ost-Afr. p. 56* (1894: Bagamoyo; Wuolaba, Usambara, Méru Mt., Sigorari; Victoria Nyanza); *Shelley, Ibis, 1894, p. 477* (Palombi R., Nyasaland).
- Ibis egretta, Temm. Man. iv. p. 391* (1840: Ashantee); *Bp. Consp. ii. p. 151* (1855); *Hartl. Orn. W.-Afr. p. 232* (1857).
- Threskiornis æthiopicus, Gray, List Gen., App. p. 13* (1842); *id. List Grallæ Brit. Mus. p. 90* (1844); *Gurney, Ibis, 1859, p. 153* (Ibadan); *id. Ibis, 1865, p. 275* (Natal).
- Geronticus æthiopicus, Gray, Gen. B. iii. p. 566* (1847); *Layard, B. S. Afr. p. 320* (1867: Zoetendal's Vley, Dec.; Cape Town; Lake Ngami); *Gray, Hand-l. B. iii. p. 40, no. 10221* (1871); *Barratt, Ibis, 1876, p. 211* (Potchefstroom; Mooi River; Bloemfontein; Pretoria); *Holub & Pelz. Beitr. Orn. Südaf. p. 292* (1882: Transvaal).
- Geronticus religiosus, Hartl. Orn. W.-Afr. p. 231* (1857: Casamance); *id. J. f. O. 1861, p. 271* (Bissao).
- Threskiornis religiosus, Cass. Proc. Philad. Acad. 1859, p. 174* (Camma River); *Hartert, J. f. O. 1883, p. 607* (Loko, April; Sokoto).
- Ibis sacer, Böhm, J. f. O. 1886, p. 432* (Likulwe R.).
- Ibis melanocephala (nec T.), Sharpe, Ibis, 1891, p. 118* (err.: Fao, Oct.).

*Adult male in breeding-plumage.* General colour above and below pure white, including the wings and tail, the long scapulars and secondaries shaded with clear grey towards the ends, with a terminal bar of purple on the former; the secondaries purple along both webs, all these decorated plumes being very loose in texture, and with the webs decomposed; quills white, with steel-blue tips; the sides of the chest and of the lower surface covering the wing-bones vermilion: "bill very dark brown; bare skin of head and neck black, but with a pink spot under the eye; eyes black; iris dark brown, with a reddish outer ring; naked space under the wings bright brick-red" (*C. J. Andersson*). Total length 25 inches, culmen 6.4, wing 14.5, tail 5.5, tarsus 3.8, middle toe and claw 3.6.

*Adult female.* Similar to the male, but a little smaller. Total length 24 inches, culmen 5·8, wing 14·6, tail 5·7, tarsus 3·5, middle toe and claw 3·6.

The series in the British Museum is insufficient for me to determine all the changes of plumage in this species; but I conjecture that the winter plumage follows the same rule as in *I. melanocephala*, and that the bird loses the ornamental plumes of the scapulars and inner secondaries, which will be found to be black with a greenish gloss, but without the decomposed webs which characterize the breeding-plumage.

*Young* birds appear to have the bastard-wing, primary-coverts, and quills tipped with black, more or less irregular in shape on the latter; the head and neck streaked with black, and in some examples the throat is also streaked with black; the long inner secondaries uniform dusky brown, with more or less white at the base: "bill, legs, and skin of throat black; iris dark brown" (*T. Ayres*).

Mr. Ayres gives the following description of the soft parts of a female specimen killed in winter plumage:—"Bill, tarsi, feet, and bare skin of neck black: iris blackish brown, with an outer ring of dark crimson."

Mr. Andersson says that in young birds the ring round the iris is whitish instead of reddish, the pink spot under the eye is livid, and the naked space under the wing is paler red.

*Hab.* Africa generally, extending rarely to Egypt, Algeria, and as far east as the Persian Gulf\*.

|                      |                                                                               |                              |
|----------------------|-------------------------------------------------------------------------------|------------------------------|
| a. Juv. sk.          | Fao, Persian Gulf, Oct. 26.                                                   | W. D. Cumming, Esq.<br>[P.]. |
| b. Juv. sk.          | Egypt.                                                                        | Old Coll.                    |
| c. Juv. st.          | Egypt.                                                                        | Old Coll.                    |
| d. Ad. sk.           | Egypt.                                                                        | Major Denham [P.].           |
| e. Pull. st.         | Egypt.                                                                        | Purchased.                   |
| f. ♂ ad. sk.         | Damietta, Egypt, Nov. ( <i>Filip-<br/>poni</i> ).                             | Shelley Coll.                |
| g. Juv. sk.          | Usambara Hills, East Africa<br>( <i>Sir J. Kirk</i> ).                        | Shelley Coll.                |
| h, i. ♂ ♀ ad.<br>sk. | Palombi River, Shirwa Plain,<br>Nyassa-land, Oct. 23 ( <i>A.<br/>Whyte</i> ). | Sir H. H. Johnston,<br>[P.]. |
| k. Ad. sk.           | Zambesi ( <i>Dr. Bradshaw</i> ).                                              | Shelley Coll.                |
| l. Ad. sk.           | Transvaal ( <i>T. Ayres</i> ).                                                | Shelley Coll.                |
| m. ♂ ad. sk.         | Transvaal ( <i>T. Ayres</i> ).                                                | A. Foresman, Esq. [P.].      |
| n. ♀ ad. sk.         | Transvaal ( <i>T. Ayres</i> ).                                                | Sharpe Coll.                 |

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\* Pallas speaks of a *Numenius ibis* (Zoogr. ii. p. 165) as found on the Black Sea and the Caspian Sea, but not reaching the mouth of the Volga. Von Nordmann never met with the bird himself, but appears to credit its occasional occurrence in South Russia, as he enters it in his book. Bogdanoff believes that the species should be eliminated from the list of the birds of the Caucasus; but Dr. Radde considers this to be premature at present, as he believes that the species may occur, and he enters the name of *Tantalus ibis*, Linn., in his  
 "any white Ibis occurs in the Caucasus, it will most probably be  
 which we know extends to Southern Persia.

|              |                                                                |                     |
|--------------|----------------------------------------------------------------|---------------------|
| a. ♀ ad. sk. | Kroonstad, Orange Free State,<br>June 2 ( <i>F. Symonds</i> ). | Gurney Coll.        |
| p. Ad. sk.   | South Africa.                                                  | Earl of Derby [P.]. |
| q. Juv. st.  | South Africa.                                                  | Sir A. Smith [C.].  |
| r. Skeleton. | South Africa.                                                  | Purchased.          |

2. *Ibis bernieri*.

*Ibis bernieri*, *Bp. Consp.* ii. p. 151, note (1850); *Schl. & Poll. Faune Madag.*, Ois. ii. p. 126 (1868); *Schl. P. Z. S.* 1870, p. 381, cum fig.; *Gray, Hand-l. B.* iii. p. 40, no. 10223 (1871); *Reichen. J. f. O.* 1877, p. 151; *Elliot, P. Z. S.* 1877, p. 487; *Sibree, Ibis*, 1892, p. 117.

*Ibis religiosa* (*nec Savign.*), *Hartl. Faun. Madag.* p. 77 (1861); *Schl. P. Z. S.* 1866, p. 425.

*Ibis æthiopica*, var. *bernieri*, *Grandid. Rev. et Mag. de Zool.* 1868, p. 1; *Milne-Edwards & Grandid. H. N. Madag.*, Ois. ii. p. 531, pls. 218-221 (1882: S.W., W., and N.E. Madagascar).

*Threskiornis bernieri*, *Hartl. Vög. Madag.* p. 317 (1877).

*Adult.* Allied to *Ibis æthiopica*, and having no elongated plumes on the fore-neck. It differs, however, in having the white plumes extending higher on the neck, in its white iris, in its pure white quills, and in its ashy-grey inner secondaries: "bill and neck black; feet dark brown; iris white" (*A. Grandidier*). Total length 21 inches, culmen 4.9, wing 14, tail 5.4, tarsus 3.

*M. Grandidier* says that, during the breeding-season, the colour of the body becomes bright red.

*Young.* Differs from the adult in having the head feathered as well as the neck, both these parts streaked with black and white.

*Hab.* Madagascar.

|             |                                              |                     |
|-------------|----------------------------------------------|---------------------|
| a. Ad. st.  | Madagascar.                                  | Zoological Society. |
| b. Juv. sk. | "Between the two forests,<br>E. Madagascar." | Rev. J. Wills [C.]. |

3. *Ibis melanocephala*.

Black-headed Ibis, *Lath. Gen. Syn. Suppl.* i. p. 241 (1787).

*Tantalus melanocephalus*, *Lath. Ind. Orn.* ii. p. 709 (1790).

*Tantalus de Macé*, *Cuv. Ann. Mus. Paris*, iv. p. 125 (1804).

*Ibis melanocephala*, *Vieill. N. Dict. d'Hist. Nat.* xvi. p. 23 (1817); *Jard. & Selby, Ill. Orn.* iii. pl. 120 (c. 1837); *Bp. Consp.* ii. p. 151 (1855); *id. C. R.* xl. p. 724 (1855); *Schl. Mus. Pays-Bas*, *Ibis*, p. 15 (1863: Java); *Salvad. Ucc. Born.* p. 359 (1874); *Blyth, B. Burm.* p. 158 (1875: Arakan); *Elliot, P. Z. S.* 1877, p. 488; *David & Oust. Ois. Chine*, p. 452 (1877: Cochin China; N. of China; ? Manchuria); *Hume & Davison, Str. F.* vi. p. 484 (1878: C. Tenasserim); *Davidson & Wenden, Str. F.* vii. p. 91 (Deccan; ? breeding); *Cripps, t. c.* p. 310 (Faridpur: cold weather); *Hume, t. c.* p. 491 (Calcutta); *Legge, B. Ceylon*, p. 1106 (1879: breeding); *Hume, Str. F.* viii. p. 144 (1879); *Doig, t. c.* p. 372 (E. Narra: breeding); *Butler, Cat. B. Sind etc.* p. 71 (1879); *id. Cat. B. S. Bomb. Pres.* p. 85 (1880); *Vidal, Str. F.* ix. p. 91 (1880: S. Konkan: cold weather); *Butler, t. c.* p. 435; *Reid, Str. F.* x. p. 77 (1881: Lucknow: cold weather); *Oates, Str. F.* x.

- p. 244 (1882); *Davidson, t. c.* p. 324 (1882: W. Khandeish, cold weather); *Oates, B. Brit. Burm.* ii. p. 268 (1883: ? breeding); *Parker, Ibis*, 1883, pp. 194, 195 (Ceylon: breeding); *Swinh. & Barnes, Ibis*, 1885, p. 136 (Mhow); *Seeb. B. Japan. Emp.* p. 232 (1890: Yokohama); *Oates, ed. Hume's Nests & Eggs*, iii. p. 226 (1890: Jhansie: breeding); *De la Touche, Ibis*, 1892, p. 490 (Foochow and Swatow).
- Ibis leucon*, *Temm. Pl. Col.* v. pl. 481 (1829: Java).
- Ibis macei*, *Wagler, Syst. Av.*, *Ibis*, p. 368, sp. 3 (1827).
- Ibis bengala*, *Cuv. Règne Anim.* i. p. 520 (1829); *Less. Traité*, p. 568 (1831).
- Ibis religiosa (nec L.)*, *Sykes, P. Z. S.* 1832, p. 160.
- Ibis aimolene*, *Hodgs. Icon. ined. in Brit. Mus., Grallæ*, pl. 79 (no. 865); *id. in Gray's Zool. Misc.* p. 86 (1844: Nepal Terai).
- Geronticus melanocephalus*, *Gray, List Grallæ Brit. Mus.* p. 90 (1844); *id. Gen. B.* iii. p. 566 (1847); *id. Hand-l. B.* iii. p. 40, no. 10222 (1871).
- Threskiornis melanocephalus*, *Gray, Cat. Mamm. etc. Nepal pres. Hodgs.* p. 137 (1846); *Blyth, Cat. B. Mus. A. S. B.* p. 275 (1849: Assam); *Irby, Ibis*, 1861, p. 243 (Oudh); *Swinh. P. Z. S.* 1863, p. 318; *Jerd. B. Ind.* iii. p. 768 (1864); *Blyth, Ibis*, 1867, p. 174; *Beavan, Ibis*, 1868, p. 399 (Julpigorie; Maunbhoom, March; Moulmein, Oct.); *Blyth, Ibis*, 1870, p. 175; *Holdsw. P. Z. S.* 1872, p. 479; *Godwin-Austen, J. A. S. Beng.* xli. p. 143 (1872; Mymensing); *Hume, Nests & Eggs Ind. B.* p. 632 (1873); *id. Str. F.* i. pp. 106, 257 (1873: Sind); *Adam, t. c.* p. 400 (Sambhur); *Hayes Lloyd, Ibis*, 1873, p. 419 (Kathiawar); *Ball, Str. F.* ii. p. 436 (1874); *Oates, Str. F.* iii. p. 347 (1875); *Butler, Str. F.* iv. p. 25 (1876: N. Guzerat); *Bingham, t. c.* p. 213 (Cawnpore: breeding); *Fairb. t. c.* p. 264 (Deccan); *Ball, Str. F.* vii. p. 231 (1878: Ganges—Godaveri); *Murray, Vertebr. Faun. Sind*, p. 278 (1884: Sind, breeding).
- Ibis propinqua*, *Swinh. P. Z. S.* 1870, p. 428; *id. P. Z. S.* 1871, p. 411 (Talienwan; Canton River); *Blakist. & Pryer, B. Japan*, p. 117 (1882: near Tokio); *Seeb. Ibis*, 1884, p. 35, 1888, p. 473 (Yedo); *id. Ibis*, 1888, p. 473 (syn.); *Blakist. Amended List B. Japan*, pp. 24, 40 (1884: not in Yezo); *Stejn. Pr. U.S. Nat. Mus.* x. p. 274 (1887).

*Adult male in breeding-plumage.* Similar to *I. æthiopica*, being white all over like that species, but distinguished by its pure white quills, which have no black tips, by having the long inner secondaries pearly grey, and by having a ruff of elongated feathers round the neck descending in a tuft of long plumes on the fore-neck: "bill black; whole head and neck, and edges of eyelids dark bluish black; legs and toes glossy black; claws dull black" (*E. W. Oates*): "bare skin of wing-bones blood-red" (*V. Ball*). Total length 24 inches, culmen 6.5, wing 14.5, tail 5, tarsus 4.3, middle toe and claw 3.9.

*Adult male in winter plumage.* Distinguished by the absence of the elongated plumes on the fore-neck, and the want of the decomposed feathers on the inner secondaries, the latter being ordinary rounded quills of a grey colour.

From the varying amount of black feathers on the neck of winter-plumaged birds, I imagine that at the last-named season of the year



the neck of the adult bird is more or less completely clothed with feathers up to the nape. There is such a specimen in the British Museum, from the Deccan, and that the bird is fully adult is proved by its white quills. Many other adult birds have remains of white feathers on the neck. The black marking on the primaries is extremely irregular, and is mostly developed in immature birds; it is sometimes represented by a black tip to the quills, at other times by a broad black line along the end of either web. Occasionally immature birds may be recognized by the black shafts to the primaries, although they have otherwise the bare head and neck of the adults.

*Young* birds have the head and neck blackish, more or less streaked with white, and have a good deal of blackish at the ends of the bastard wing-feathers, primary-coverts, and quills, the latter always with black shafts: "bare skin along wing-bones black" (*V. Ball*).

*Hab.* Indian Peninsula generally and Ceylon, Burmese Countries, and China to the southern islands of Japan. Java.

|                                            |                                                                 |                                                  |
|--------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------|
| <i>a.</i> Juv. sk.                         | India.                                                          | Old Coll.                                        |
| <i>b.</i> Juv. head.                       | Roree, Upper Sindh, Nov. 19<br>( <i>A. O. H.</i> ).             | Hume Coll.                                       |
| <i>c.</i> Ad. sk.                          | Simla.                                                          | Hume Coll.                                       |
| <i>d.</i> ♂ juv. sk.                       | Delhi, Oct. 13 ( <i>C. R. Bingham</i> ).                        | Hume Coll.                                       |
| <i>e.</i> ♂ juv. sk.                       | Sultanpur, Gurgaon district,<br>Jan. 20 ( <i>W. N. Chill</i> ). | Hume Coll.                                       |
| <i>f.</i> Juv. sk.                         | Kurnal, Punjab, Feb.                                            | Hume Coll.                                       |
| <i>g.</i> Ad. sk.                          | Etawah.                                                         | Hume Coll.                                       |
| <i>h.</i> Juv. sk.                         | Oudh, Jan.                                                      | Hume Coll.                                       |
| <i>i-p.</i> Ad. et juv.<br>sk.             | Nepal.                                                          | Hodgson Coll.<br>(Types of <i>I. aimolene</i> .) |
| <i>q, r.</i> Ad.; <i>s, t.</i><br>Imm. sk. | Raipur.                                                         | Hume Coll.                                       |
| <i>u.</i> ♂ ad. sk.                        | Mhow, Feb. 10.                                                  | Colonel Swinhoe [P.].                            |
| <i>r, w, x.</i> Ad. sk.                    | Deccan ( <i>Sykes</i> ).                                        | India Museum.                                    |
| <i>y.</i> ♂ juv. sk.                       | Ceylon, March 25.                                               | Colonel Legge [P.].                              |
| <i>z.</i> Ad. sk.                          | Assam ( <i>A. W. Chennell</i> ).                                | Tweeddale Coll.                                  |
| <i>a', b'.</i> ♂ ad. et<br>imm. sk.        | Pegu, Jan., March ( <i>E. W. O.</i> ).                          | Oates Coll.                                      |
| <i>c'.</i> ♂ ad. sk.                       | Sittang River, Feb. 5 ( <i>W. Davi-<br/>son</i> ).              | Hume Coll.                                       |
| <i>d.</i> Ad. sk.                          | Yedo, Hondo Isl., Japan,<br>( <i>Blakiston</i> ).               | Seebohm Coll.                                    |
| <i>e'.</i> Ad. sk.                         | Yokohama ( <i>H. Pryer</i> ).                                   | Seebohm Coll.                                    |
| <i>f'.</i> Ad. sk.                         | Mymensing, Assam.                                               | Godwin-Austen Coll.                              |
| <i>g'-i'.</i> Skeletons.                   | India.                                                          | Purchased.                                       |

#### 4. *Ibis molucca*.

*Ibis molucca*, *Cuvier*, *Règne Anim.* i. p. 520, note (1820); *Less. Traité d'Orn.* p. 568 (1831); *Pucher. Rev. et Mag. de Zool.* 1851, p. 373; *Hartl. J. f. O.* 1855, p. 421; *Reichen. J. f. O.* 1877, p. 151; *Salvad. Ann. Mus. Genov.* xviii. p. 337 (1882); *id. Orn. Papuasia*, iii. p. 380 (1882: Ceram; Salawati; Sorong; Fly River); *Nehrck. J. f. O.* 1885, p. 35 (Waigiou); *Salvad. Agg. Orn. Papuasia*, iii. p. 209 (1891).

*Ibis leucon*, pt., *Less. Compl. Buff. Ois.* p. 691 (1838).

*Ibis strictipennis*, *Gould, P. Z. S.* 1837, p. 106; *Bp. Consp.* ii. p. 151 (1855); *id. C. R.* xl. p. 724 (1855); *Schl. Mus. Pays-Bas*, *Ibis*, p. 14 (1863: Ceram); *Rosenb. J. f. O.* 1864, p. 136; *Jerd. B. Ind.* iii. p. 769 (1864); *Finsch, Neu-Guinea*, p. 182 (1865); *Scl. P. Z. S.* 1870, p. 633; *Garrod, P. Z. S.* 1873, pp. 437, 638; *Scl. Ibis*, 1876, p. 361; *D'Albert. Ann. Mus. Genov.* x. p. 20 (1877); *Salvad. t. c.* p. 165 (Sorong); *Ramsay, Proc. Linn. Soc. N. S. W.* i. p. 190 (1876: New South Wales; N. Australia; Queensland; Victoria); *Rosenb. Malay. Arch.* p. 324 (1878-79); *D'Albert. & Salvad. Ann. Mus. Civic. Genov.* xiv. p. 146 (1879); *Legge, B. Ceylon*, p. 1107, note (1880).

*Threskiornis strictipennis*, *Gould, B. Austr.* vi. pl. 46 (1848); *Reichenb. Grallatores*, Taf. cxlii. figs. 1007-1008 (1848); *id. Vög. Neuhol.* p. 23 (1850); *Macgill. Narr. Voy. 'Rattlesnake,'* ii. p. 358 (1852); *Gray, P. Z. S.* 1858, p. 197; *id. Cat. B. New Guinea*, p. 62 (1859); *Gould, Handb. B. Austr.* ii. p. 284 (1865); *Ramsay, Ibis*, 1865, p. 86 (Port Denison); *id. P. Z. S.* 1867, p. 600 (Clarence River); *Blyth, Ibis*, 1867, p. 174, 1870, p. 176; *Diggles, Orn. Austr.* ii. pl. 102 (1877); *Ramsay, Proc. Linn. Soc. N. S. W.* i. p. 385 (1876), ii. p. 198 (1877); *id. P. Z. S.* 1877, p. 340 (Fitzroy River; Herbert River); *id. Pr. Linn. Soc. N. S. W.* (2) ii. p. 172 (1887: Derby, N.W. Australia); *id. Tab. List Austr. B.* p. 20 (1888); *Cox & Hamilton, Proc. Linn. Soc. N. S. W.* (2) iv. p. 420 (1890: Mudgee District); *North, Rec. Austr. Mus.* i. p. 118 (1891); *Campbell, Vict. Nat.* 1891, pp. 73, 74.

*Geronticus melanocephalus*, pt., *Gray, Gen. B.* iii. p. 566 (1847).

*Geronticus strictipennis*, *Gray, Gen. B.* iii. p. 566 (1847); *id. Hand-l. B.* iii. p. 40, no. 10224 (1871).

*Ibis stricticollis* (err.), *Jerd. B. Ind.* iii. p. 768 (1864).

*Ibis æthiopica*, pt., *Elliot, P. Z. S.* 1877, p. 485.

*Adult.* Everywhere white, including the tail and wings; inner secondaries mottled irregularly with purplish black, this mottling vanishing towards the innermost secondaries, which have the webs disconnected and entirely purplish black; the primaries broadly tipped with blue-black, the bulk of the secondaries pure white; on the fore-neck some elongated, narrow, drooping plumes: "head and upper half of the neck bare, and, with the bill, of a deep slaty black; back of the head and neck crossed by ten narrow distinct bands of rose-pink, and on the crown of the head a series of oval spots, arranged in the form of a star, of the same colour; thighs and knees deep purple; tarsi and feet light purple; iris dark brown" (*J. Gould*). Total length 30 inches, culmen 7.5, wing 14.5, tail 5.1, tarsus 4.3.

"I have observed considerable differences in the transverse rose-pink markings at the back of the neck; in some specimens they are very conspicuous, while in others they are scarcely apparent" (*Gould*).

*Adult female.* Similar to the male, but smaller in size (*Gould*).

*Young* birds, for the first, and perhaps for the second, year of their existence, have that part of the neck which is bare in the adult partially clothed with white feathers like the rest of the body (*Gould*).

*Hab.* Nearly the whole of Australia ; New Guinea ; Salawati ; Waigiou ; Ceram.

|              |                                      |                          |
|--------------|--------------------------------------|--------------------------|
| a. Ad. sk.   | Australia.                           | Old Coll.                |
| b. Ad. sk.   | Australia.                           | Sir T. Mitchell [P.].    |
| c. Ad. sk.   | Australia.                           | Purchased.               |
| d. Ad. sk.   | New South Wales.                     | Gould Coll.              |
| e. Ad. sk.   | New South Wales.                     | Hume Coll.               |
| f. Ad. sk.   | Queensland.                          | Salvin-Godman Coll.      |
| g. ♂ ad. sk. | N.W. Australia (T. H. Bowyer Bower). | Capt. Bowyer Bower [P.]. |
| h. Ad. sk.   | N. Ceram.                            | Wallace Coll.            |

## 2. CARPHIBIS.

*Carphibis*, *Reichenb. Av. Syst. Nat.* p. xiv (1852) . . . . <sup>Type.</sup> *C. spinicollis*.

*Range.* Confined to Australia, where it is widely distributed.

### 1. *Carphibis spinicollis*.

*Ibis spinicollis*, *Jameson, Edinb. New Phil. Journ.* xix. p. 213 (1835) ; *Jard. & Selby, Ill. Orn.* [N.S.] pl. 17 (1837) ; *Schl. Mus. Pays-Bas*, *Ibis*, p. 12 (1863) ; *Reichen. J. f. O.* 1877, p. 150.

*Ibis lamellicollis*, *Lafr. Mag. de Zool.* 1836, p. 57.

*Geronticus spinicollis*, *Gray, List Grall. Brit. Mus.* p. 91 (1844) ; *id. Gen. B.* iii. p. 566 (1847) ; *Gould, B. Austr.* vi. pl. 45 (1848) ; *Ramsay, P. Z. S.* 1867, p. 600 (Clarence River) ; *Gray, Hand-l. B.* iii. p. 39, no. 10220 (1871) ; *Ramsay, Pr. Linn. Soc. N. S. W.* (2) ii. p. 172 (1887 : Derby) ; *id. Tab. List Austr. B.* p. 20 (1888) ; *North, Nests & Eggs Austr. B.* p. 312 (1889) ; *Car & Hamilton, Pr. Linn. Soc. N. S. W.* (2) iv. p. 420 (1890 : Mudgee Distr.).

*Carphibis spinicollis*, *Reichenb. Grall. Taf.* lxxxii. figs. 1109-10 (1848) ; *Bonap. Consp.* ii. p. 152 (1855) ; *id. C. R.* xl. p. 724 (1855) ; *Gould, Handb. B. Austr.* ii. p. 282 (1865) ; *Ramsay, Ibis*, 1866, p. 335 (Port Denison) ; *id. P. Z. S.* 1877, p. 340 (Lower Herbert R.) ; *Elliot, P. Z. S.* 1877, p. 491 ; *North, Pr. Linn. Soc. N. S. W.* (2) i. p. 1061 (1887 : Hilston, N. S. W. : breeding).

*Adult male.* General colour above black, glossed with different colours, steel-green on the upper back and mantle and purplish on the scapulars and wings, the whole of the upper parts barred across with black ; the lower back, rump, and upper tail-coverts black, with scarcely any gloss ; the long upper tail-coverts and tail-feathers pure white ; wing-coverts and quills black, externally barred with black and bronzy purple ; primaries black, with a steel-green shade externally ; crown of head and fore part of throat bare, surrounded by a ruff of white feathers, which extends almost to the nape from the middle of the hind-neck, descends the sides of the latter and joins on the fore-neck ; lower hind-neck dusky blackish, with scarcely any gloss ; centre of fore-neck white, with long straw-coloured plumes on each side ; the sides of the neck and sides of the chest black, with a beautiful green and purplish gloss, the latter overspreading the mantle ; breast and abdomen, as well as the axillaries, pure white ; under wing-coverts and quill-lining

blackish: "head and fore part of neck naked and of a dull inky black; bill dull black, crossed at the base by irregular transverse bars of yellowish brown; thighs crimson: legs blackish brown, the two colours blending at the knee; iris dark brown" (*J. Gould*). Total length 29 inches, culmen 8, wing 14·7, tail 5·4, tarsus 3·3.

*Adult female*. Similar to the male in colour, but smaller. Total length 27 inches, culmen 5·35, wing 14·2, tail 5·3, tarsus 3·2.

*Young*. General colour above uniform sooty-black, with none of the gloss of the adult; head and neck feathered, the crown and sides of face dusky blackish or striated with white; the hinder neck white, like the entire under surface of body; the sides of the chest slightly blackish, but not glossed with purple as in the adult.

*Hab.* Australia, except the western portion.

|                                   |                                               |                            |
|-----------------------------------|-----------------------------------------------|----------------------------|
| <i>a, b.</i> Juv. sk.             | Australia.                                    | Purchased.                 |
| <i>c.</i> Ad. st.                 | Australia.                                    | Major-Gen. Hardwicke [P.]. |
| <i>d.</i> Ad.; <i>e.</i> Juv. sk. | N. S. Wales.                                  | Hume Coll.                 |
| <i>f.</i> Juv. st.                | N. S. Wales.                                  | Australian Museum [P.].    |
| <i>g.</i> Juv. st.                | N. S. Wales.                                  | Zoological Society.        |
| <i>h, i.</i> Ad. et juv. sk.      | Queensland ( <i>J. T. Cockerell</i> ).        | Salvin-Godman Coll.        |
| <i>k.</i> Juv. sk.                | N.W. Australia ( <i>T. H. Bowyer Bower</i> ). | Capt. Bowyer Bower [P.].   |

### 3. INOCOTIS.

|                                                                           |                        |
|---------------------------------------------------------------------------|------------------------|
|                                                                           | Type.                  |
| <i>Inocotis</i> , <i>Reichenb. Av. Syst. Nat.</i> p. xiv (1852) . . . . . | <i>I. papillosus</i> . |
| <i>Pseudibis</i> , <i>Hodgs. in Gray's Zool. Misc.</i> p. 86 (1844) . .   | <i>I. papillosus</i> . |

*Range*. Confined to the Indian Peninsula.

#### 1. *Inocotis papillosus*.

*Ibis papillosa*, *Temm. Pl. Col.* v. pl. 304 (1824); *Less. Traité*, p. 568 (1831); *Sykes, P. Z. S.* 1832, p. 162 (Deccan); *Schl. Mus. Pays-Bas*, *Ibis*, p. 11 (1863: Dusan River, Borneo); *Reichen. J. f. O.* 1877, p. 149.

*Ibis papillata*, *Wagler, Syst. Av.*, *Ibis*, sp. 10, p. 371 (1827).

*Ibis* (*Pseudibis*) *papillosa*, *Hodgs. Icon. ined. in Brit. Mus., Grallæ*, pl. 78 (no. 629); *id. in Gray's Zool. Misc.* p. 86 (1844).

*Geronticus papillosus*, *Gray, List Grallæ Brit. Mus.* p. 90 (1844); *id. Cat. Mamm. etc. Nepal pres. Hodgs.* p. 137 (1846); *id. Gen. B.* iii. p. 566 (1847); *Blyth, Cat. B. Mus. As. Soc.* p. 275 (1849); *Licht. Nomencl. Av. Berol.* p. 154 (1855); *Irby, Ibis*, 1861, p. 243 (Oudh: cold weather); *Jerd. B. Ind.* iii. p. 769 (1864); *Blyth, Ibis*, 1867, p. 174; *Beavan, Ibis*, 1868, p. 400 (Manbhum); *Gray, Hand-l. B.* iii. p. 39, no. 10219 (1871); *Hayes Lloyd, Ibis*, 1873, p. 419 (Kathiawar); *Hume, Nests & Eggs Ind. B.* p. 633 (1873); *id. Str. F.* i. p. 257 (1873); *Adam, t. c.* p. 400 (Sambhur: breeding); *Ball, Str. F.* ii. p. 436 (1874); *Salvad. Ucc. Born.* p. 360 (1874); *Blyth, B. Burm.* p. 158 (1875: Arrakan); *Butler, Str. F.* iv. p. 25 (N. Guzerat); *Hume, t. c.* p. 25, note; *Fairb. t. c.* p. 264 (Deccan); *Ball, Str. F.* vii. p. 231 (1878: Ganges—Godaveri); *Murray, Vertebr. Faun. Sind*, p. 278 (breeding).

*Inocotis papillosus*, *Bp. Consp.* ii. p. 154 (1855); *id. C. R.* xl. p. 724

(1855); *Elliot, P. Z. S.* 1877, p. 492; *Davidson & Wenden, Str. F.* vii. p. 32 (1878: Deccan; breeding); *Doig, t. c.* pp. 372, 377 (E. Narra; breeding); *Hume, Str. F.* viii. p. 114 (1879); *Butler, Cat. B. Sind etc.* p. 71 (1879: Sind; Cutch; Guzerat; Kathiawar); *id. Cat. B. S. Bomb. Pres.* p. 85 (1880: not in Konkan or near Belgaum); *id. Str. F.* ix. p. 435 (1881); *Reid, Str. F.* x. p. 77 (1881: Lucknow; resident); *Davidson, Str. F.* x. p. 324 (1882: W. Khandeish); *Davison, Str. F.* x. p. 417 (1883: Wynaad; ? breeding); *Swinh. & Barnes, Ibis*, 1885, p. 136 (Mhow); *McGregor, Str. F.* x. p. 442 (1887: S. Mahratta country; cold weather); *Oates, ed. Hume's Nests & Eggs Ind. B.* iii. p. 228 (1890).

*Adult male.* General colour above dark olive-brown, with a shade of steel-blue, principally on the rump and upper tail-coverts; wing-coverts black, glossed with steel or purplish blue, the quills also externally of the same colour, excepting the inner secondaries, which are olive-brown like the back; on the inner coverts adjoining the scapulars a large patch of white feathers, some of which have purplish-blue spots near the ends; tail steel-blue, shaded with purple, and steel-green below; face, throat, and crown bare, the hinder crown covered with papillæ; neck all round and under surface of body dark earthy brown; he under wing-coverts and axillaries blackish brown, glossed with steel-blue or steel-green; inner aspect of quills bronzy green; under tail-coverts also washed with oily or bronzy green: "bill greenish leaden; legs and feet brick-red; iris dull orange-red" (*T. C. Jerdon*). Total length 27 inches, culmen 6.1, wing 15.7, tail 7.8, tarsus 2.8.

*Adult female.* Similar to the male in colour and with the papillæ on the crown equally developed: "bill greenish horny; legs and feet dusky red, the joints black; iris orange" (*G. King*). Total length 28 inches, culmen 5.6, wing 15.7, tail 7.5, tarsus 2.9.

*Young.* Distinguished from the adults by having the crown partially feathered, the brown feathers extending from the hind-neck on to the centre of the crown in a point. The plumage is also varied with brown or sandy-coloured margins to the feathers.

*Hab.* Indian Peninsula; Borneo.

|                                         |                                                        |               |
|-----------------------------------------|--------------------------------------------------------|---------------|
| a. Ad. sk.                              | Kutch ( <i>Dr. Stoliczka</i> ).                        | Hume Coll.    |
| b, c. ♂ ad.: d, e.<br>♀ ad. et juv. sk. | Sambhur, Nov., Dec., March<br>( <i>R. M. Adam</i> ).   | Hume Coll.    |
| f. Juv. sk.                             | Hissar, Oct. 2.                                        | Hume Coll.    |
| g, h. Ad. et imm.<br>sk.                | Sirsa, cold season.                                    | Hume Coll.    |
| i. ♀ ad. sk.                            | Kumaon Bhabur, March 25<br>( <i>G. King</i> ).         | Hume Coll.    |
| k, l. Ad. sk.                           | Etawah, Nov.                                           | Hume Coll.    |
| m. ♂ ad. sk.                            | Gondah, Oudh, Nov. 17 ( <i>R.</i><br><i>M. Adam</i> ). | Hume Coll.    |
| n. ♂ ad. sk.                            | Oudh, Dec.                                             | Hume Coll.    |
| o, p. Ad. sk.                           | Nepal.                                                 | Hodgson Coll. |
| q. Ad. sk.                              | Darjiling ( <i>Pearson</i> ).                          | India Museum. |
| r. Ad. sk.                              | Bhutan ( <i>Pemberton</i> ).                           | India Museum. |
| s, v. Ad. sk.                           | Deccan ( <i>Sykes</i> ).                               | India Museum. |

|                            |                                     |                 |
|----------------------------|-------------------------------------|-----------------|
| <i>x, y, z.</i> ♂ ad. sk.  | Ahmednuggur, Dec. (S. B. Fairbank). | Tweeddale Coll. |
| <i>a'.</i> Bones of trunk. | Nepal.                              | Hodgson Coll.   |

#### 4. GRAPTOCEPHALUS \*.

Graptocephalus, *Elliot, P. Z. S.* 1877, p. 490..... Type. G. *davisoni*.

*Range.* The same as that of the single species of the genus.

##### 1. Graptocephalus davisoni.

*Geronticus davisoni*, *Hume, Str. F.* iii. p. 300 (1875).

*Geronticus papillosus* (*nec Temm.*), *Oates, Str. F.* iii. p. 347 (1875).

*Inocotis papillosus* (*nec Temm.*), *Oates, Str. F.* v. p. 169 (1877).

*Graptocephalus davisoni*, *Elliot, P. Z. S.* 1877, p. 490; *Hume & Davison, Str. F.* vi. p. 485 (1878: S. Tenasserim); *Hume, Str. F.* viii. p. 114 (1879); *Oates, Str. F.* ix. p. 300 (1880), x. p. 244 (1882); *id. Handb. B. Brit. Burm.* ii. p. 269 (1883: S. Pegu, between Pegu and Sittang R.).

*Geronticus harmandi*, *Oust. Bull. Soc. Philom.* 1877, p. 28 (Siam: Upper Mekong in Cambodia).

*Ibis davisoni*, *Reichen. J. f. O.* 1877, p. 275.

*Adult male* (type of species). General colour above olive-brown with a slight greenish wash; upper tail-coverts and tail purplish blue; wings black, glossed with purple or bronze; the inner wing-coverts white, forming a large shoulder-patch; the inner secondaries brown like the back; head bare; neck and under surface of body, from the lower throat downwards, dark brown; under wing-coverts and axillaries blackish, glossed with purplish blue; the quills bronzy green below; under tail-coverts washed with steel-green; tail steel-blue below: "bill bluish; naked skin of head and neck blackish brown; a pure white band encircling the neck at its junction with the head, tinged with blue on the nape; feet pale coral-red; claws brown; iris orange-red" (*E. W. Oates*). Total length 32·5 inches, culmen 7·5, wing 16·6, tail 8·1, tarsus 3·5.

*Adult female.* Similar to the male in plumage, but smaller. Total length 29·5 inches, culmen 6·2, wing 15·5, tail 7·4, tarsus 3.

*Young.* Only differs from the adult in having the feathering continued to the occiput, and in having brown margins to all the feathers: "bill slaty blue, tinged with plumbeous at the base; head dull black, with no warts; ring round the neck dirty white; legs and feet dirty white; scutæ dull black; iris pale grey-brown" (*A. L. Hough*).

*Hab.* Cochin China and Siam to Southern Pegu and the extreme south of Tenasserim and Tonka.

*a.* ♀ juv.; *b.* Ad. sk. Lower Pegu, April (*E. W. Oates* Coll. O.).

*c, d.* ♂ ad. sk. Pakchan, Tenasserim, June Hume Coll. (Types of species.)  
(*W. Davison*).

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\* Somewhere near this genus will probably come *Thaumatibis* of Elliot (type *Ibis gigantea*, *Oust. Bull. Soc. Philom.* (7) i. p. 25 (1877), from Cochin China. I have not seen a specimen of this species.

|              |                                                   |            |
|--------------|---------------------------------------------------|------------|
| e. ♀ ad. sk. | Taroar, Tonka, Feb. 11 (J. Darling).              | Hume Coll. |
| f. ♀ ad. sk. | Siam, opposite Mergui Distr., May 5 (W. Davison). | Hume Coll. |

## 5. NIPPONIA.

Nipponia, *Reichenb. Av. Syst. Nat.* p. xiv (1852) . . . . . Type. N. nippon.

*Range.* Eastern Siberia, Corea, and the Japanese Islands, extending throughout the greater part of China.

## 1. Nipponia nippon.

- Ibis nippon*, *Temm. Pl. Col.* v. pl. 551 (1835); *id. & Schl. Faun. Jap.* p. 117, pl. 71 (1850); *Blakiston, Ibis*, 1862, p. 331 (Northern Japan); *Swinh. P. Z. S.* 1863, p. 318; *id. Ibis*, 1863, p. 416 (Formosa); *Schl. Mus. Pays-Bas*, *Ibis*, p. 9 (1863); *Swinh. P. Z. S.* 1871, p. 411 (China in winter to Hainan); *David, N. Arch.* vii. *Bull.* p. 12 (1871: Peking); *Oust. op. cit.* viii. p. 136 (1872); *Swinh. Ibis*, 1873, p. 249 (Ningpo); *id. Ibis*, 1875, p. 455 (Hakodadi); *Tacz. J. f. O.* 1875, p. 256 (Mouth of Ussuri R., breeding); *David & Oust. Ois. Chine*, p. 453, pl. 116 (1877: Corea; Manchuria); *Blakist. & Pryer, Ibis*, 1878, p. 223 (Tokio Bay, Yezo, breeding); *Blakist. Amended List B. Jap.* p. 12 (1884); *Seeb. B. Jap. Emp.* p. 232 (1890); *Styan, Ibis*, 1891, pp. 327, 493 (Lower Yangtze, resident; Ningpo, breeding); *Campbell, Ibis*, 1892, p. 244 (Corea).  
*Geronticus nippon*, *Gray, List Grall. Brit. Mus.* p. 91 (1844); *id. Hand-l. B.* iii. p. 40, no. 10232 (1871).  
*Nipponia temmincki*, *Reichenb. Av. Syst. Nat.* p. xiv (1852); *id. Grall. Taf.* 141. fig. 538 (1851); *Bonap. C. R.* xl. p. 725 (1855).  
*Nipponia nippon*, *Bonap. Consp.* ii. p. 152 (1855); *Tacz. Bull. Soc. Zool. France*, i. p. 258 (1876); *Stejn. Pr. U.S. Nat. Mus.* x. p. 272 (1887: Hondo; Corea); *Tacz. Mém. Imp. Acad. St. Pétersb.* (7) xxxix. p. 967 (1893).  
*Ibis (Geronticus) nippon*, *Radde, Reis. Sibir.* ii. p. 341 (1863: Kasatkina, April).  
*Ibis sinensis*, *David, C. R.* lxxv. p. 64 (1872); *Oust. Nouv. Arch.* viii. *Bull.* p. 129 (1872); *David, Ann. Sc. Nat.* (5) xix. Art. ix. p. 3 (1874).  
*Ibis nippon*, var. *sinensis*, *David & Oust. Ois. Chine*, p. 454, pl. 117 (1877: S.E. of Chekiang).  
*Ibis temmincki*, *Reichen. J. f. O.* 1877, p. 152.

*Adult.* General colour above and below white, tinged with pinkish-salmon colour on the quills and tail-feathers; shafts of the primaries somewhat more orange; on the nape and neck some drooping white plumes; axillaries white, tinged with salmon colour, which is very strongly shown on the inner aspect of the wing: "lores, forehead, and chin orange-vermilion, the colour lighter on the chin, intensified around the base of the bill; eyelid golden yellow; bill black, mottled with red at the tips of both mandibles; the nail yellow; nasal grooves red; tarsi, toes, and naked tibiae light red; iris orange" (*P. L. Jouy*). Total length 29 inches, culmen 6.1, wing 15.4, tail 6.2, tarsus 2.8.

*Young.* With the plumage grey instead of white.

Abbé David has separated the Chinese Ibis from that of Japan on account of its grey plumage, which he considers to be a constant



feature in the Chinese bird, distinguishing it from the Japanese representative. On the other hand, the late Consul Swinhoe appears to have had no doubt that the grey plumage was that of the young bird. The whole subject has been carefully treated by Dr. Stejneger (*l. c.*) in 1887, but even he was unable to arrive at a definite conclusion on the subject; and so far I myself have not been able to decide the question, but I incline to the belief that the grey birds are the young, and that they retain this phase of plumage for some time before assuming the white plumage of the old bird.

*Hab.* Eastern Siberia, Manchuria, and Japan, to China, Formosa, and Hainan.

|                      |                                                                            |                            |
|----------------------|----------------------------------------------------------------------------|----------------------------|
| <i>a.</i> Ad. sk.    | Japan.                                                                     | Leyden Museum.             |
| <i>b.</i> Ad. st     | Japan.                                                                     | Purchased.                 |
| <i>c.</i> ♀ ad. sk.  | Corea.                                                                     | C. W. Campbell, Esq. [P.]. |
| <i>d.</i> Ad. sk.    | Shanghai.                                                                  | Tweeddale Coll.            |
| <i>e.</i> Ad. st.    | Shanghai.                                                                  | J. Webb, Esq. [P.].        |
| <i>f.</i> ♂ imm. sk. | Shapooshan Distr., Che-<br>kiang Prov., May ( <i>W.</i><br><i>Pryer</i> ). | Tweeddale Coll.            |

## 6. COMATIBIS.

*Comatibis*, *Reichenb. Av. Syst. Nat.* p. xiv (1852)..... <sup>Type.</sup> *C. comata*.

*Range.* Asia Minor; Red Sea to Abyssinia; interior of North-eastern Africa.

### 1. *Comatibis comata*.

*Ibis comata*, *Ehr. Mus. Berol.*; *Rüpp. Neue Wirb., Vög.* p. 49 (1835-40); *Schl. Mus. Puy-Bas*, *Ibis*, p. 9 (1863); *Heugl. Orn. N.O.-Afr.* ii. Abth. i. p. 1144 (1871: Qonfudah, Arabia, 19° N. lat.); *Reichen. J. f. O.* 1877, p. 149; *Dresser, B. Eur.* vi. p. 329, pl. 408 (1880); *Oustalet, Ann. Sci. Nat.* xiii. Art. 7, pp. 3, 7 (1882).

*Geronticus comatus*, *Gray, List Grallæ Brit. Mus.* p. 90 (1844); *Rüpp. Syst. Uebers.* p. 122, pl. 45 (1845); *Gray, Gen. B.* iii. p. 566 (1847); *Heugl. Syst. Uebers.* p. 61 (1856: Abyssinia, breeding; Woggara; Abyssinian Coast in winter); *Licht. Nomencl. Av. Berol.* p. 91 (1854); *Bp. C. R.* xl. p. 725 (1855); *Tristr. Ibis*, 1860. p. 78 (Sahara, near Laghouat); *Gray, Hand-l. B.* iii. p. 40, no. 10231 (1871); *Danf. Ibis*, 1880, p. 88 (Biledjik, Asia Minor); *Scl. P. Z. S.* 1880, p. 356.

*Comatibis comata*, *Reichenb. Grall. Taf.* ccxci. figs. 2383, 2384 (1848); *Bp. Consp.* ii. p. 153 (1855); *Loche, Expl. Sci. Algér.* ii. p. 153 (1867); *Elliot, P. Z. S.* 1877, p. 493; *Salvad. Ann. Mus. Genov.* (2) i. p. 231 (1884: Cialalaka, Shoa); *id. op. cit.* (2) vi. p. 316 (1888: Antoto).

*Ibis calvus* (*nec Bodd.*), *Lervill. Jun. Expl. Sci. Algér.* pl. 12 (1850); *Dresser, Ibis*, 1893, p. 377.

*Ibis* (*Geronticus*) *comata*, *Blanf. Geol. & Zool. Abyss.* p. 436 (1870: Senafé Highlands and Antalo).

*Geronticus calvus*, *Danford, Ibis*, 1880, p. 88.

*Inocotis comata*, *Sharpe, Bull. B. O. Club*, iii. p. v (1893: Suakin).

*Adult female.* General colour above black, glossed with dark



green with slight purple reflections; lesser wing-coverts like the back; median coverts glossy bronze, with green bases and an intermediate shade of purple; greater coverts, quills, and tail-feathers black, glossed with dark green; crown of head bare, "greenish black, with a median hourglass-shaped patch of orange"; sides of face and throat also bare; on the hind-neck and sides of neck a frill of elongated narrow plumes, which are greenish black like the rest of the under surface; under tail-coverts more distinctly glossed with green; under wing-coverts black, with a steel-green gloss: "bill and feet red; iris rufous" (*von Heuglin*): "iris orange" (*H. E. White*). Total length about 30 inches, culmen 5.4, wing 16, tail 7.4, tarsus 2.6.

*Adult female.* Does not differ from the male in colour. Total length 22 inches, culmen 5, wing 15.5, tail 7, tarsus 2.6.

*Young.* Differs from the adults in having the head feathered and covered with grey down, the feathers being ashy whitish streaked with black. The rest of the plumage very similar to that of the adults, but with purple edges to the feathers of the upper surface, while there is no sign of the coppery wing-patch of the adult.

*Hab.* The same as that of the genus.

|                   |                                                       |                                |
|-------------------|-------------------------------------------------------|--------------------------------|
| a. Head of adult. | Mogador.                                              | Howard Saunders, Esq.<br>[P.]  |
| b. ♀ ad. sk.      | Ain Tarsilt Pass, Interior<br>of Marocco*.            | Herbert E. White,<br>Esq. [P.] |
| c. Juv. sk.       | Tunis.                                                | Mr. L. Fraser [C.]             |
| d. Ad. sk.        | Suakin, Red Sea.                                      | Capt. R. H. Penton<br>[P.]     |
| e. ♀ ad. sk.      | Antalo, Tigré, Abyssinia,<br>7000 feet, May 11, 1868. | W. T. Blanford, Esq.<br>[C.]   |
| f. Ad. st.        | Abyssinia.                                            | Dr. Rüppell [C.]               |

## 7. GERONTICUS.

Geronticus, *Wagler, Isis*, 1832, p. 1232..... Type.  
G. calvus.

*Range.* Confined to South Africa.

### 1. Geronticus calvus.

L'Ibis, *Briss. Orn.* v. p. 347 (1760).

Courly à tête nue du Cap de Bonne Espérance, *Daubent. Pl. Enl.* viii.  
pl. 867.

L'Ibis noir, *Buff. Hist. Nat. Ois.* viii. p. 17 (1781).

Black Ibis, *Lath. Gen. Syn.* iii. pt. 1, p. 112 (1785).

Bald Ibis, *Lath. t. c.* p. 116 (1785).

Tantalus calvus, *Bodd. Tabl. Pl. Enl.* p. 52 (1783).

Tantalus niger, *Gm. S. N. i.* p. 650 (1788); *Lath. Ind. Orn.* ii. p. 707  
(1790).

Ibis calva, *Vieill. N. Dict. d'Hist. Nat.* xvi. p. 23 (1817); *Wagler, Syst. Av.*, Ibis, p. 372, sp. 11 (1827); *id. Isis*, 1829, p. 761; *Schl.*

*Mus. Pays-Bas*, Ibis, p. 11 (1863); *Reichen. J. f. O.* 1877, p. 149.

Ibis gonocephala, *Wagler, Isis*, 1829, p. 761.

\* Nesting in a hole of a cliff, about 50 feet high.

*Geronticus calvus*, *Wagler, Isis*, 1832, p. 1232; *Gray, List Grallæ Brit. Mus.* p. 90 (1844); *id. Gen. B.* iii. p. 566 (1847); *Bp. Consp.* ii. p. 153 (1855); *id. C. R.* xl. p. 725 (1855); *Gurney, Ibis*, 1860, p. 219 (Natal); *Layard, B. S. Afr.* p. 321 (1867: Caledon; Eastern Cape Colony); *Gray, Hand-l. B.* iii. p. 39, no. 10218 (1891); *Gurney, in Anderss. B. Dam. Ld.* p. 297 (1872: Orange River); *Pelz. Ibis*, 1873, p. 39; *Elliot, P. Z. S.* 1877, p. 494; *Butler, Feilden, & Reid, Zool.* 1882, p. 424 (Newcastle; Buffalo River); *Sharpe, ed. Layard's B. S. Afr.* p. 738 (1884).

*Adult male.* General colour above dark metallic green, with a slight bluish-purple gloss; lower back, rump, and upper tail-coverts like the back; tail-feathers dark steel-green; wings also glossy green like the back, with purplish reflections, the greater number of the median coverts coppery purple, forming a large patch; head, nape, and throat bare, with a ruff of elongated steel-green feathers, somewhat lanceolate in shape and overhanging the lower throat; remainder of under surface black, slightly glossed with steel-green and purple; the sides of the body and axillaries more distinctly glossed with green; under wing-coverts black, glossed with green, as also the inner lining of quills: "top of head bright red; bill and feet duller red; skin of neck and round the eye greenish white" (*T. Ayres*). Total length 26 inches, culmen 5·2, wing 15, tail 6·6, tarsus 2·7.

*Adult female.* Similar to the male. Total length 26 inches, culmen 5·35, wing 14·7, tail 7·2, tarsus 2·85.

*Hab.* The same as that of the genus.

|                          |                              |               |
|--------------------------|------------------------------|---------------|
| <i>a, b.</i> ♂ ♀ ad. sk. | Zulu-land ( <i>Gordge</i> ). | Shelley Coll. |
| <i>c.</i> Ad. st.        | Cape.                        | Purchased.    |
| <i>d.</i> Skeleton.      | Cape.                        | Purchased.    |

## 8. BOSTRYCHIA.

Type.

*Bostrychia*, *Reichenb. Av. Syst. Nat.* p. xiv (1852).. *B. carunculata*.

*Range.* N.E. Africa.

### 1. *Bostrychia carunculata*.

*Ibis carunculata*, *Rüpp. Neue Wirb., Vög.* p. 49, Taf. xix. (1835-40); *Des Murs in Lefebvre's Voy. Abyss.* p. 163 (1845: Tigré; Semien); *Schl. Mus. Pays-Bas, Ibis*, p. 10 (1863); *Finsch, Tr. Z. S.* vii. p. 298 (1870: Senafé; Goongoona; Facado); *Heugl. Orn. N.O.-Afr.* ii. Abth. i. p. 1139 (1873: Abyssinia, 5000 to 11,000 feet); *Reichen. J. f. O.* 1877, p. 155.

*Ibis (Harpiprion) carunculata*, *Blanf. Geol. & Zool. Abyss.* p. 437 (1870: Senafé; Lake Ashangi; Wadela and Dalanta Plateaux).

*Harpiprion carunculatus*, *Gray, List Grallæ*, p. 92 (1844: Abyssinia); *Rüpp. Syst. Uebers.* p. 122 (1845); *Heugl. Syst. Uebers.* p. 61 (1854).

*Geronticus carunculatus*, *Gray, Gen. B.* iii. p. 566 (1847); *id. Hand-l. B.* iii. p. 40, no. 10227 (1871).

*Bostrychia carunculata*, *Reichenb. Grallæ*, Taf. lxxxiii. fig. 1011 (1851); *Bp. Consp.* ii. p. 152 (1855); *id. C. R.* xl. p. 725 (1855); *Elliot, P. Z. S.* 1877, p. 501; *Salvad. Ann. Mus. Civic. Genov.* (2) i. p. 23 (1884: Shoa); *id. op. cit.* vi. p. 317 (1888: Antoto).

*Adult male.* General colour blackish, glossed with olive-green; tail-feathers blackish, slightly glossed with steel-green; wings parti-coloured, with a large patch of white on the inner edge of the lesser and median series, the rest of the coverts blackish in the centre, with broad white margins or tips, giving a mottled appearance to the wings; the bastard-wing, primary-coverts, and quills blackish, glossed with blue, the secondaries with green, the inner ones exactly like the back; head very much crested and the neck-plumes elongated to a certain extent, the feathers of these parts being dusky with hoary-grey margins; sides of face uniform dusky brown, the ear-coverts washed with hoary grey; remainder of under surface dusky brown, slightly shaded with hoary grey; the under wing-coverts and axillaries dusky with a greenish shade, more distinct on the quill-lining: "bill and caruncle on throat dusky red; feet pure red; iris pearly white, with a red ring" (*Heuglin*). Total length 28 inches, culmen 4·7, wing 13·9, tail 5·4, tarsus 2·4.

*Adult female.* Similar to the male. Total length 25 inches, culmen 4·7, wing 14, tail 6, tarsus 2·4.

*Hab.* The same as that of the genus.

|               |                                                   |                   |
|---------------|---------------------------------------------------|-------------------|
| a. Ad. st.    | Abyssinia.                                        | Dr. Rüppell [P.]. |
| b. Ad. sk.    | Facado, Abyssinia, May 2 ( <i>W. Jesse</i> ).     | Shelley Coll.     |
| c. ♂ ad. sk.  | Senafé, April 23 ( <i>W. Jesse</i> ).             | Tweeddale Coll.   |
| d. ♀ ad. sk.  | Angolala, Shoa, June ( <i>Sir W. C. Harris</i> ). | India Museum.     |
| e. ♂ ad. sk.  | Ankober, Feb. ( <i>W. C. H.</i> ).                | India Museum.     |
| f, g. Ad. st. | Shoa ( <i>W. C. H.</i> ).                         | India Museum.     |

## 9. HAGEDASHIA.

|                                                               | Type.        |
|---------------------------------------------------------------|--------------|
| Hagedashia, <i>Bp. Consp.</i> ii. p. 152 (1855) . . . . .     | H. hagedash. |
| Parnopio, <i>Heine, in Heine &amp; Reichen. Nomencl. Mus.</i> |              |
| <i>Hem.</i> p. 314 (1890) . . . . .                           | H. hagedash. |
| <i>Range.</i> Confined to Africa.                             |              |

### 1. Hagedashia hagedash.

Hagedash, *Sparrm. Voy.* i. p. 280.

Tantalus hagedash, *Lath. Ind. Orn.* ii. p. 709 (1790).

Tantalus caffrensis, *Licht. teste Bp.*

Ibis hagedash, *Vieill. N. Dict. d'Hist. Nat.* xvi. p. 19 (1817); *Licht. Verz. Doubl.* p. 75 (1823); *Wagler, Syst. Av.*, Ibis, p. 186, sp. 16 (1827); *id. Isis*, 1829, p. 760; *Less. Traité*, ii. p. 567 (1831); *Rüpp. Neue Wirb., Vög.* p. 49 (1835-40); *Grill, Zool. Anteckn.* pp. 11, 54 (1858: Knysna); *Schl. Mus. Pays-Bas*, Ibis, p. 10 (1863: S. Africa; Senaar); *Cab. in Von der Deck. Reis.* iii. p. 47 (1869: Aruscha; Osi River); *Finsch & Hartl. Vög. Ostaf.* p. 735 (1870: Mozambique); *Heugl. Orn. N.O.-Afr.* ii. Abth. i. p. 1141 (1873); *W. A. Forbes, Ibis*, 1883, p. 523 (Loko, Nov.); *Fischer, Zeitschr. ges. Orn.* i. p. 386 (1884: Great Aruscha; Lake Naivascha); *Shelley, P. Z. S.* 1885, p. 230 (Taveta); *id. Ibis*, 1885, p. 415 (Somali-land); *Fischer, J. f. O.* 1885, p. 117 (Osi-Tana Mouth; Wami River); *Böhm, J. f. O.* 1885, p. 38 (Ugalla River); *id. J. f. O.* 1886 (Kiranda, W. of Tanganyika), p. 418 (Lufuku R.),

- p. 431 (Likulwe River); *Büttik. Notes Leyden Mus.* vii. p. 242 (1885: Liberia), xi. pp. 127, 136 (1889); *Reichen. J. f. O.* 1887, p. 146 (Kinandu Bay); *Schalow, t. c.* p. 226; *Sharpe, Ibis*, 1892, p. 542 (Victoria Nyanza).
- Ibis chalcopetra*, *Vieill. N. Dict. d'Hist. Nat.* xvi. p. 9 (1817: Senegal); *id. Gal. Ois.* ii. p. 123, pl. 246 (1834); *Wagler, Syst. Av.*, *Ibis*, p. 185, sp. 9 (1827); *Jard. Ann. & Mag. Nat. Hist.* xvii. p. 7 (1846: Old Calabar River).
- Harpiprion hagedash*, *Gray, List Grallæ Brit. Mus.* p. 92 (1844: R. Gambia); *Rüpp. Syst. Uebers.* p. 122 (1845); *Heugl. Syst. Uebers.* p. 61 (1856: Blue and White Nile).
- Geronticus hagedash*, *Gray, Gen. B.* iii. p. 566 (1847); *Hartl. Orn. W.-Afr.* p. 231 (1857); *Cass. Proc. Philad. Acad.* 1859, p. 174 (Camma River); *Gurney, Ibis*, 1859, p. 248; *Hartl. J. f. O.* 1861, p. 270 (Bissao); *Antin. Cat. descr. Ucc.* p. 108 (1864: Senaar; Kordofan; White Nile); *Gurney, Ibis*, 1865, p. 274 (Natal); *Layard, B. S. Afr.* p. 320 (1867: Knysna; Zambesi); *Gurney, Ibis*, 1868, p. 260; *Gray, Hand-l. B.* iii. p. 40, no. 10228 (1871); *Ayres, Ibis*, 1871, p. 266 (Vaal River); *Sharpe & Bouvier, Bull. Soc. Zool. France*, iii. p. 79 (1878: Quilo); *Fischer, J. f. O.* 1879, pp. 295, 296; *Shelley, P. Z. S.* 1881, p. 600 (Usambara Hills); *Bocage, Orn. Angola*, p. 460 (1881: Cabinda; not S. of Congo); *Butler, Feilden, & Reid, Zool.* 1882, p. 423 (Newcastle; Colenso, breeding); *Hartert, J. f. O.* 1886, p. 607 (Samfara; Loko).
- Hagedashia caffrensis*, *Bp. Consp.* ii. p. 152 (1855); *Gurney in Anderss. B. Dam. Ld.* p. 298 (1872: Lake Regions; R. Teoughe, breeding; R. Botletlé).
- Phimosus hagedash*, *Reichenb. Grallæ*, Taf. lxxx. fig. 530 (1851).
- Bostrychia hagedash*, *Bp. C. R.* xl. p. 725 (1855).
- Hagedashia chalcopetra*, *Elliot, P. Z. S.* 1877, p. 500.
- Ibis caffrensis*, *Reichen. J. f. O.* 1877, p. 12 (Loango), p. 155.
- Ibis (Hagedashia) chalcopetra*, *Oust. N. Arch. Mus.* (2) ii. *Bull.* p. 117 (1879: Lopé, July).
- Hagedashia hagedash*, *Sharpe, ed. Layard's B. S. Afr.* p. 739 (1884: E. London).
- Theristicus caffrensis*, *Reichen. J. f. O.* 1887, p. 1887, p. 43 (Simiu River; Victoria Nyanza; Ugaia).
- Parnopio hagedash*, *Heine & Reichen. Nomencl. Mus. Hein.* p. 314 (1890).
- Theristicus leucocephalus*, *Reichen. Vög. Deutsch-Ost-Afr.* p. 54 (1894: Usambara; Ugalla; Aruscha; Teita; Victoria Nyanza).

*Adult female.* General colour above dark olive-green, with indistinct edges of darker green; the lower back, rump, and upper tail-coverts blackish, with a slight gloss of steel-blue; tail dark purplish blue, with a slight greenish shade near the end; wing-coverts metallic green, changing under certain lights to rosy purple, the greater series externally coppery bronze; bastard-wing, primary-coverts, and quills purplish black, the secondaries more decidedly purple, the inner ones dark green like the back; head and neck clothed with feathers of a dusky ash-grey, the head and sides of face uniform, but the feathers of the nape and hind-neck with ashy-whitish margins; the sides of the face and ear-coverts rather darker grey than the head, as also the throat; along the upper cheeks a band of whitish feathers; remainder of under surface of body ashy brown, with pale sandy-coloured margins to most of the feathers, especially on the fore-neck and chest; under tail-coverts dark green

near the vent, the longer ones purplish blue like the under tail-feathers; under wing-coverts and axillaries black, glossed with purplish blue; inner aspect of quills bronzy steel-green: "bill black, the culmen crimson towards the base; tarsi and toes dull red; iris very dark brown, with a narrow outer ring nearly white" (*T. Ayres*). Total length 23 inches, culmen 5, wing 13·6, tail 5·7, tarsus 2·75.

*Hab.* Confined to Africa.

|                        |                                        |                                                      |
|------------------------|----------------------------------------|------------------------------------------------------|
| a. Ad. sk.             | Senegal ( <i>D'Einville</i> ).         | Riocour Coll.<br>(Type of <i>Ibis chalcoptera</i> .) |
| b. Ad. st.             | Gambia.                                | Governor Rendall [C.]                                |
| c. Var. sk.            | Denkera, Ashanti.                      | Sharpe Coll.                                         |
| d, e. ♂ ♀ ad. sk.      | South Africa.                          | Sir A. Smith [C.]                                    |
| f, g. Ad. et pull. st. | South Africa.                          | Purchased.                                           |
| h. Ad. sk.             | Port Natal.                            | Shelley Coll.                                        |
| i. Ad. sk.             | Natal.                                 | T. Ayres, Esq. [C.]                                  |
| k. ♀ ad. sk.           | Zulu-land, July ( <i>Gordge</i> ).     | Shelley Coll.                                        |
| l. Ad. sk.             | Usambara Hills ( <i>Sir J. Kirk</i> ). | Shelley Coll.                                        |
| m. Ad. sk.             | Taveta, 300 ft.                        | H. H. Johnston, Esq.,<br>C.B. [P.]                   |
| n. Skeleton.           | S. Africa.                             | Eyton Coll.                                          |

## 10. THERISTICUS.

*Theristicus*, *Wagler, Isis*, 1832, p. 1231 ..... Type.  
T. caudatus.

*Range.* Confined to South America.

### Key to the Species.

- a. Throat and breast orange-rufous; abdomen only black ..... *melanopsis*, p. 21.  
b. Throat whitish; fore-neck rufous; entire breast as well as abdomen black ..... *caudatus*, p. 23.

### 1. *Theristicus melanopsis*.

- ? Le Petit Courly d'Amérique, *Briss. Orn.* v. p. 337 (1760).  
? Grey Ibis, *Lath. Gen. Syn.* iii. pt. 1, p. 110 (1785).  
? Tantalus griseus, *Gm. Syst. Nat.* i. p. 653 (1788).  
Black-faced Ibis, *Lath. Gen. Syn.* iii. pt. 1, p. 108, pl. lxxix. (1785).  
Tantalus melanopsis, *Gm. Syst. Nat.* i. p. 653 (1788).  
Manduria ó curucáu, *Azara, Apunt.* iii. p. 189 (1803).  
Ibis albicollis (*nec Gm.*), *Vieill. Nouv. Dict. d'Hist. Nat.* xvi. p. 17 (1817); *Neuwied, Beitr. Naturg. Bras., Vög.* iv. p. 698 (1831);  
*Burmeister, Reise La Plata-St.* ii. p. 510 (1861: Paraná, Mendoza, Tucuman).  
Ibis melanopsis, *Wagl. Syst. Av.*, Ibis, p. 373, sp. 17 (1827); *Tschudi & Cab. Faun. Peruan.* pp. 51, 298 (1845-46); *Burm. Th. Bras.* iii. p. 421 (1856); *Scl. & Salv. P. Z. S.* 1869, p. 600 (Pitumarca); *Huds. P. Z. S.* 1872, p. 549 (Rio Negro, Patagonia); *Reichen. J. f. O.* 1877, p. 154.  
Ibis alba, *Less. Traité d'Orn.* p. 567 (1831).  
*Theristicus melanopsis*, *Wagl. Isis*, 1832, p. 1232; *Darwin, Voy. 'Beagle,' Birds*, p. 128 (1841: Patagonia); *Gray, List Grall. Brit. Mus.* p. 91 (1844: Africa!; Straits of Magellan; Chili); *Hartl.*

- Index Azara*, p. 23 (1847); *Bp. Consp.* ii. p. 155 (1855); *Schl. Mus. Pays-Bas*, *Ibis*, p. 7 (1863: pt.); *Cunningham*, *Ibis*, 1866, p. 126 (Elizabeth Is., breeding); *Newton*, *Ibis*, 1870, p. 502; *id.* *P. Z. S.* 1871, p. 156, pl. iv. fig. 8; *Scl. & Salv. Nomencl.* p. 127 (1873: pt.); *Durnf. Ibis*, 1877, p. 190 (Buenos Ayres, winter); *id.* *Ibis*, 1878, p. 400 (Sengel R., Nov.; Chupat Valley); *Tacz. P. Z. S.* 1874, p. 562 (Junin); *Scl. & Salv. P. Z. S.* 1878, p. 436 (Sandy Point); *id.* *Voy. Chall., Birds*, ii. p. 106 (1880); *Durnf. Ibis*, 1880, p. 424 (Tucuman; Salta, June); *Barrows*, *Auk*, i. p. 272 (1884: Lower Uruguay).
- Tantalus melanopis*, *Gm. Syst. Nat.* i. p. 653 (1788).
- Theristicus melanops*, *Fraser*, *P. Z. S.* 1843, p. 117 (Interior of Chili).
- Tantalus melanops*, *Forster*, *Icon. ined. in Brit. Mus.* pl. 117; *id.* *Descr. Anim.* p. 332 (1844).
- Geronticus melanopis*, *Gray*, *Gen. B.* iii. p. 566 (1847); *id.* *Hand-l. B.* iii. p. 40, no. 10233 (1871); *Huds. P. Z. S.* 1871, p. 261.
- Geronticus albicollis* (*nec Gm.*), *Pelz. Orn. Bras.* p. 307 (1871).
- Theristicus caudatus* (*nec Bodd.*), *Elliot*, *P. Z. S.* 1877, p. 498, (pt.); *Taczan. Orn. Pérou*, iii. p. 417 (1886); *Scl. & Huds. Arg. Orn.* ii. p. 110 (1889: cold weather visitor); *Graham Kerr*, *Ibis*, 1891, p. 270 (R. Pilcomayo); *Oust. Miss. Cap Horn*, *Ois.* p. 330 (1891); *Graham Kerr*, *Ibis*, 1892, p. 145 (Fortin Page, Dec.); *Holland*, *t. c.* p. 205 (Estancia Espartilla, May to Aug.).
- Theristicus melanopes*, *Heine & Reichen. Nomencl. Mus. Hein.* p. 313 (1890).
- Ibis caudatus* (*nec Bodd.*), *Frenzel*, *J. f. O.* 1891, p. 124 (Cordova, Arg. Rep.).
- Theristicus branickii*, *Berl. & Stolz. Ibis*, 1894, p. 405.

*Adult female.* General colour above silvery grey, with ashy-brown margins to the feathers, which are further marked by a sub-terminal black bar, the innermost secondaries being coloured and marked like the back; wing-coverts hoary grey, the outer ones white; bastard-wing, primary-coverts, and quills black, with a slight purple gloss, the inner secondaries externally grey; lower back, rump, and upper tail-coverts black, with a bronzy-green gloss; tail-feathers black, with a slight greenish gloss; head and neck all round, as well as the throat and breast, orange-buff, inclining to chestnut on the crown and hinder neck; throat bare, with a tuft of whitish feathers on the chin; on the sides of the chest a half-collar of grey feathers; remainder of under surface of body slaty black, the under tail-coverts black with a green gloss; under wing-coverts and axillaries black with a faint purplish gloss; quills bronzy green below: "feet carmine or scarlet; iris scarlet" (*C. Darwin*): "bill, naked part of face, and throat black, the tip of the bill dull greenish; feet dark fleshy red; iris pale brown" (*Burmeister*). Total length 26 inches, culmen 5.4, wing 14.1, tail 7.4, tarsus 2.8.

*Adult male.* Differs from the adult female in having sandy-buff edges to the feathers of the upper surface, as well as to the feathers of the abdomen; patch of feathers on the chin more extended.

*Young* (Pitumarca, Peru). Distinguished by its shorter bill and feathered throat, the cheeks only being bare; the head, neck, and breast whiter than in the adults, with orange-chestnut on the head and chest; the upper surface almost entirely pearly grey with a

slight greenish shade, but with scarcely any indication of dusky margins to the feathers.

The differences of plumage relied on by Count von Berlepsch and Mr. Stolzmann for the separation of *T. branickii* seem to me to be only those of age or season. The feathered throat occurs in some of the Chilian birds, and, like the white abdomen, seems to be a sign of immaturity. On the other hand, *T. caudatus* would seem to lose the feathering of the throat, as our female specimen has the middle of the throat bare.

*Hab.* South America, from the Straits of Magellan to Chili and Peru, Argentina and Uruguay; north to the province of Matto Grosso in Brazil.

|                   |                                                 |                           |
|-------------------|-------------------------------------------------|---------------------------|
| a. Ad. sk.        | [S. America.]*                                  | Old Coll.                 |
| b. Ad. sk.        | Chili.                                          | C. Crawley, Esq.<br>[P.]  |
| c, d. ♂ ♀ ad. sk. | Sandy Point, Straits of Magellan.               | Voy. H.M.S. 'Challenger.' |
| e, f. Ad. st.     | Straits of Magellan.                            | Antarctic Exped.          |
| g. ♀ juv. sk.     | Pitumarca, Peru, April 8 ( <i>H. Whitely</i> ). | Salvin-Godman Coll.       |
| h. Skeleton.      | Chili.                                          | Purchased.                |

## 2. *Theristicus caudatus*.

Courly à col blanc de Cayenne, *Daubent. Pl. Enl.* viii. pl. 976.

Le Grand Courlis de Cayenne, *Buff. Hist. Nat. Ois.* viii. p. 47 (1781).

*Scolopax caudatus*, *Bodd. Tabl. Pl. Enl.* p. 57 (1783).

White-necked Ibis, *Lath. Gen. Syn.* iii. pt. 1, p. 109 (1785).

*Tantalus albicollis*, *Gm. Syst. Nat.* i. p. 653 (1788).

*Geronticus caudatus*, *Gray, Gen. B.* iii. p. 566 (1847); *id. Hand-l. B.* iii. p. 40, no. 10234 (1871).

*Ibis albicollis*, *Cab. in Schomb. Reis. Guian.* iii. p. 757 (1848).

*Theristicus albicollis*, *Bp. Consp.* ii. p. 155 (1855).

*Geronticus caudatus*, *Gray, Hand-l. B.* iii. p. 40, no. 10234 (1871).

*Theristicus melanopis* (*nec Gm.*), *Scl. & Salv. Nomencl.* p. 127 (1873: pt.).

*Ibis caudata*, *Reichen. J. f. O.* 1877, p. 154.

*Theristicus caudatus*, *Elliot, P. Z. S.* 1877, p. 492 (pt.); *Salvin, Ibis*, 1886, p. 171 (British Guiana).

*Adult female.* Similar to *T. melanopis*, but darker; blackish above, distinctly glossed with oil-green, and not having the banded appearance of the fore-named species, the black of the under surface spreading over the whole of the chest, breast, and abdomen: "iris red" (*H. Whitely*). Total length 26 inches, culmen 5.9, wing 15, tail 7, tarsus 3.05.

*Hab.* British Guiana.

|              |                                                                |                     |
|--------------|----------------------------------------------------------------|---------------------|
| a. ♂ ad. sk. | Rupurumi River, British Guiana, Nov. 15 ( <i>H. Whitely</i> ). | Salvin-Godman Coll. |
| b. ♀ ad. sk. | Aunai, April 1 ( <i>H. W.</i> ).                               | Salvin-Godman Coll. |
| c. Skeleton. |                                                                | Purchased.          |

\* "Interior of Africa"! Major Denham: *cf. Gray, Cat. Grallæ*, p. 91.



## 11. MOLYBDOPHANES.

Type.

*Molybdophanes*, *Reichenb. Av. Syst. Nat.* p. xiv (1852). *M. cærulescens*.*Range.* The same as that of the single species of the genus.1. *Molybdophanes cærulescens*.*Curucáu aplomado*, *Azara, Apunt.* iii. p. 195 (1803).*Ibis cærulescens*, *Vieill. Nouv. Dict. d'Hist. Nat.* xvi. p. 18 (1817); *Schl. Mus. Pays-Bas*, *Ibis*, p. 9 (1863); *Scl. & Salv. P. Z. S.* 1869, p. 635 (Conchitas); *Reichen. J. f. O.* 1877, p. 155.*Ibis plumbea*, *Temminck, Pl. Col.* v. pl. 235 (1823); *Wagler, Syst. Av.*, *Ibis*, p. 372, sp. 14 (1827); *Less. Traité*, p. 567 (1831); *Tschudi & Cab. Faun. Per.* pp. 51, 298 (1845-46); *Burm. Th. Bras.* iii. p. 422 (1856: S. Brazil; Paraguay); *id. Reise La Plata-St.* ii. p. 510 (1861: Banda Oriental; Entrerios).*Harpiprion plumbeus*, *Wagler, Isis*, 1832, p. 1232.*Theristicus cærulescens*, *Gray, List Grall. Brit. Mus.* p. 91 (1844: "Mexico").*Geronticus cærulescens*, *Gray, Gen. B.* iii. p. 566 (1847); *Hartl. Index Azara*, p. 23 (1847); *Gray, Hand-l. B.* iii. p. 40, no. 10226 (1871); *Pelz. Orn. Bras.* pp. 307, 457 (1871: Caiçara, Sept., Nov.).*Molybdophanes cærulescens*, *Reichenb. Grall. Taf.* 291. figs. 2383-84 (1851); *Bp. Consp.* ii. p. 154 (1855); *Elliot, P. Z. S.* 1877, p. 503.*Harpiprion cærulescens*, *Scl. & Salv. Nomencl.* p. 127 (1873); *Gibson, Ibis*, 1880, p. 155 (San Antonio); *Taczan. Orn. Pérou*, iii. p. 419 (1886); *Scl. & Huds. Arg. Orn.* ii. p. 112 (1889); *Graham Kerr, Ibis*, 1891, p. 270 (R. Pilcomayo); *id. Ibis*, 1892, p. 145.

*Adult female.* General colour above hoary grey, mottled with sub-terminal markings of dusky brown, which has a greenish tinge; wing-coverts like the back, the greater series dusky, externally hoary grey; bastard-wing, primary-coverts, and quills black, externally glossed with green or purple, the inner secondaries like the back; upper tail-coverts glossy olive-green, the tail-feathers dusky and glossed with darker green; head and face fully feathered, of a dull ash-colour, with a frontal band of white, narrowing in the centre of the forehead; crest-feathers extremely long and narrow, like the feathers of the sides of the neck and lower throat, all of which are hoary grey with ashy centres; throat dusky grey; remainder of under surface of body uniform hoary grey, darker on the under tail-coverts, which are freckled with dusky vermiculations; under wing-coverts and axillaries somewhat darker ashy; quills below dusky, with a wash of greenish bronze: "bill, lores, and naked chin black; toes reddish yellow; iris orange" (*Burmeister*). Total length 30 inches, culmen 5.6, wing 15.2, tail 6.5, tarsus 3.1.

*Hab.* Central Brazil to Paraguay and Argentina.

|                         |                                                                       |                     |
|-------------------------|-----------------------------------------------------------------------|---------------------|
| <i>a.</i> ♀ ad. sk.     | Villa Maria, Matto Grosso,<br>Brazil, Sept. 4 ( <i>J. Natterer</i> ). | Salvin-Godman Coll. |
| <i>b.</i> Ad. sk.       | Chili.                                                                | Old Coll.           |
| <i>c.</i> Ad. st.       | S. America.                                                           | Purchased.          |
| <i>d, e.</i> Skeletons. | S. America.                                                           | Purchased.          |



## 12. HARPIPRION.

Type.

Harpiprion, *Wagler, Isis*, 1832, p. 1232 ..... *H. cayennensis*.

*Range.* From Panama to Colombia, Ecuador, and British Guiana, ranging southward to Southern Brazil.

## 1. Harpiprion cayennensis.

Courly vert de Cayenne, *Daubent. Pl. Enl.* viii. pl. 820.

Le Courlis des bois, *Buff. Hist. Nat. Ois.* viii. p. 43 (1781).

Cayenne Ibis, *Lath. Gen. Syn.* iii. pt. 1, p. 107 (1785).

Tantalus cayennensis, *Gm. Syst. Nat.* i. p. 652 (1788).

Tantalus cayenensis, *Lath. Ind. Orn.* ii. p. 704 (1790).

Ibis sylvatica, *Vieill. Nouv. Dict. d'Hist. Nat.* xvi. p. 16 (1817):

*Neuwied, Beitr. Naturg. Bras.* iv. p. 702 (1831: R. Itabapua; Prov. Bahia; Itahype; R. Catole).

Ibis dentirostris, *Wagl. Syst. Av.*, Ibis, p. 370, sp. 7 (1827).

Ibis cayennensis, *Less. Traité*, p. 567 (1831); *Cab. in Schomb. Reis.*

*Guian.* iii. p. 757 (1848); *Burm. Th. Bras.* iii. p. 423 (1856:

Central and Northern Brazil); *Reichen. J. f. O.* 1877, p. 154.

Harpiprion cayennensis, *Wagler, Isis*, 1832, p. 1232; *Schl. Mus.*

*Pays-Bas*, Ibis, p. 8 (1863); *Scl. & Salv. Nomencl.* p. 127 (1873:

Panama to Brazil); *id. P. Z. S.* 1873, p. 306; *Taczan. Orn. Pérou*,

iii. p. 420 (1886); *Salvin, Ibis*, 1886, p. 172 (Bartica Grove; Camacusa).

Harpiprion cayenensis, *Fraser, P. Z. S.* 1843, p. 117 (Chili); *Gray,*

*List Grall. Brit. Mus.* p. 92 (1844); *Bp. Consp.* ii. p. 155 (1855);

*Elliot, P. Z. S.* 1877, p. 502.

Geronticus cayenensis, *Gray, Gen. B.* iii. p. 566 (1847).

Geronticus cayennensis, *Gray, Hand-l. B.* iii. p. 40, no. 10225

(1871); *Pelz. Orn. Bras.* p. 307 (1871: Mattodentro; Ypanema;

Irisanga; Cuyabá; Caiçara); *id. Ibis*, 1873, p. 39.

*Adult male.* General colour above dark bronzy grass-green, including the lesser and median wing-coverts; rump and upper tail-coverts like the back, the latter slightly glossed with steel-blue; tail steel-blue, with purple and greenish reflections; greater coverts, primary-coverts, and quills black, externally purple or purplish blue with a slight bronzy appearance, the inner secondaries dark green; forehead and fore part of crown, sides of face, cheeks, and throat dusky slate-colour; the chin and fore part of malar region, the hinder crown and hind neck spangled with glossy green, with rosy purple reflections; the sides of the neck also spangled in the same manner, but much less distinctly; under surface of the body blackish, with a gloss of dark olive-green; the under tail-coverts glossy grass-green; under wing-coverts and axillaries black, glossed with purple, the under surface of the quills glossed with steel-green and purple: "bill, lores, and naked part of face greenish grey; the hinder part of face lead-colour, in very old birds bluish; feet greenish grey, but paler than the bill; iris brown" (*Burmeister*). Total length 22 inches, culmen 4·9, wing 4·8, tail 6·2, tarsus 2·3.

*Hab.* The same as that of the genus.

*a.* Ad. sk.

South America.

Major-Gen. Hardwicke.

*b.* Ad. st.

British Guiana.

Sir R. Schomburgk [C.].

|               |                                                               |                     |
|---------------|---------------------------------------------------------------|---------------------|
| c. ♂ ad. sk.  | Bartica Grove, British Guiana, Dec. 30 ( <i>H. Whitely</i> ). | Salvin-Godman Coll. |
| d, e. Ad. sk. | Rio Cotapaza, Ecuador ( <i>C. Buckley</i> ).                  | Salvin-Godman Coll. |
| f. Ad. sk.    | Interior of New Granada.                                      | Salvin-Godman Coll. |
| g. ♂ ad. sk.  | Nichi, U.S. Colombia ( <i>T. K. Salmon</i> ).                 | Salvin-Godman Coll. |
| h, i. Ad. sk. | Lion Hill, Panama ( <i>J. McLeannan</i> ).                    | Salvin-Godman Coll. |

## 13. PHIMOSUS.

Phimosus, *Wagler, Isis*, 1832, p. 1233 ..... Type. *P. infuscatus*.

*Range.* Colombia to Central and Southern Brazil and south to Argentina.

## 1. Phimosus infuscatus.

Curucau afeytado, *Azara, Apunt.* iii. p. 201 (1803).

*Ibis infuscata*, *Licht. Verz. Doubl.* p. 75 (1823); *Nouvied, Beitr. Naturg. Bras.* iv. p. 699 (1832); *Cab. in Schomb. Reis. Guian.* iii. p. 756 (1848); *Burm. Th. Bras.* iii. p. 422 (1856: Rio Janeiro; San Paulo; Paraguay); *id. Reis. La Plata-St.* p. 511 (1861: Rio Paraná); *Schl. Mus. Pays-Bas, Ibis*, p. 8 (1863: Brazil; Colombia); *Wyatt, Ibis*, 1871, p. 384 (Lake Paturia); *Reichen. J. f. O.* 1877, p. 153.

*Ibis nudifrons*, *Spir, Av. Bras.* ii. p. 69, pl. 86 (1824); *Wagler, Syst. Av., Ibis*, p. 370, sp. 6 (1827); *Less. Traité*, p. 567 (1831).

*Phimosus infuscatus*, *Wagler, Isis*, 1832, p. 1233; *Reichenb. Grall. Taf.* 140. fig. 529 (1851); *Bp. Consp.* ii. p. 156 (1855); *Scl. & Salv. Nomencl. Av. Neotr.* p. 127 (1873); *Elliot, P. Z. S.* 1877, p. 495; *Durnf. Ibis*, 1878, p. 63 (Buenos Ayres, breeding); *Salvin, Ibis*, 1880, p. 363 (Salta, June), 1886, p. 171; *Berl. J. f. O.* 1887, p. 32 (Pilcomayo); *Scl. & Hudson, Argent. Orn.* ii. p. 113 (1889); *Graham Kerr, Ibis*, 1892, p. 145 (Timbo R.; R. Paraguay; Mouth of Pilcomayo R.); *Holland, t. c.* p. 205 (Estancia Espartilla, May to Aug.).

*Harpiprion nudifrons*, *Gray, List Grallæ Brit. Mus.* p. 92 (1844).

*Geronticus infuscatus*, *Gray, Gen. B.* iii. p. 566 (1847); *Hartl. Ind. Azara*, p. 23 (1847); *Gray, Hand-l. B.* iii. p. 41, no. 10235 (1871); *Pelz. Orn. Bras.* p. 307 (1871: Rio Paraná, May; Caiçara, Nov.).

*Adult male.* General colour above black, with a steel-green gloss, more distinctly seen on the wings, which are more strongly glossed with coppery green and rosy purple; the greater coverts and the quills dark steel-green with a slight coppery gloss, the inner secondaries like the back; tail also glossy steel-green; forehead, fore part of face, and chin bare, of a pink colour in life, with carunculations on the forehead and cheeks; neck all round and under surface of body black, glossed with reddish purple on the former and with dull green on the latter; under wing-coverts and axillaries more distinctly glossed with steel-green, the lower greater coverts and the quill-lining being metallic bronzy green: "bill dingy white; feet pale pink; iris light brown" (*H. Durnford*). Total length 20.5 inches, culmen 5.1, wing 11.3, tail 4.8, tarsus 2.6.

The only specimen in the British Museum retaining any trace of young plumage has several brown feathers about the head.

Two specimens in the Salvin-Godman collection from Colombia have no papillæ on the forehead, but merely some transverse corrugations. Their faces appear also to have been red in life, whereas all the specimens from more southern localities retain a yellow face.

*Hab.* The same as that of the genus.

|               |                                       |                         |
|---------------|---------------------------------------|-------------------------|
| a. ♂ ad. sk.  | Salta, Argentine Republic,<br>Aug. 7. | H. Durnford, Esq. [C.]. |
| b. Imm. sk.   | Belgrano, Buenos Ayres,<br>April 14.  | H. Durnford, Esq. [C.]. |
| c. ♂ ad. sk.  | Rio de la Plata.                      | Salvin-Godman Coll.     |
| d. ♀ ad. sk.  | Caiçara ( <i>J. Natterer</i> ).       | Salvin-Godman Coll.     |
| e, f. Ad. sk. | Interior of Colombia.                 | Salvin-Godman Coll.     |
| g. Ad. sk.    | S. America.                           | Purchased.              |
| h. Ad. st.    | S. America.                           | Purchased.              |

#### 14. LOPHOTIBIS.

Type.

*Lophotibis*, *Reichenb. Av. Syst. Nat.* p. xiv (1852) . . . . . *L. cristata*.

*Range.* Confined to the forests of Eastern and North-eastern Madagascar.

##### 1. *Lophotibis cristata*.

Le Courly hupé de Madagascar, *Daubent. Pl. Enl.* viii. pl. 841.

Le Courlis huppé, *Buff. Hist. Nat. Ois.* viii. p. 33 (1781).

*Tantalus cristatus*, *Bodd. Tabl. Pl. Enl.* p. 51 (1783); *Gm. Syst. Nat.* i. p. 650 (1788); *Lath. Ind. Orn.* ii. p. 709 (1790); *Shaw & Nodder, Nat. Misc.* xvii. pl. 72.

Crested Ibis, *Lath. Gen. Syn.* iii. pt. 1, p. 118 (1785).

*Ibis cristata*, *Vieill. N. Dict.* xvi. p. 19 (1817); *Wagl. Syst. Av.*, Ibis, p. 372, sp. 13 (1827); *Schl. Mus. Pays-Bas*, Ibis, p. 6 (1863); *id. P. Z. S.* 1866, p. 425; *Grand. Rev. et Mag. de Zool.* 1868, p. 1; *Schl. & Poll. Faune Madag.*, Ois. p. 127 (1868); *Reichen. J. f. O.* 1877, p. 156; *Milne-Edwards & Grandid. H. N. Madag.*, Ois. ii. p. 536, pls. 222-225 (1882).

*Eudocimus cristatus*, *Pucher. Rev. Zool.* 1845, p. 277.

*Geronticus cristatus*, *Gray, Gen. B.* iii. p. 566 (1847); *id. Hand-l. B.* iii. p. 40, no. 10230 (1871); *Bartlett, P. Z. S.* 1875, p. 68.

*Bostrychia cristata*, *Reichenb. Grall.* Taf. 83. fig. 637 (1851).

*Lophotibis cristatus*, *Bp. Consp.* ii. p. 154 (1855); *Hartl. Faun. Madag.* p. 76 (1861); *Roch & E. Newt. Ibis*, 1863, p. 171 (Foule Point); *E. Newt. t. c.* p. 457 (Tranomaro); *A. Newt. P. Z. S.* 1865, p. 837; *Elliot, P. Z. S.* 1877, p. 499; *Hartl. Vög. Madag.* p. 318 (1877); *Sibree, Ibis*, 1892, p. 117.

*Adult female.* General colour above chestnut or cinnamon-brown; wings entirely white, except the innermost secondaries, which are like the back; lower back, rump, upper tail-coverts, and tail black, with a slight purplish gloss; head with a fine drooping crest, the central feathers of which are sandy buff, the lateral ones glossy steel or purplish blue like the sides of the neck; sides of face bare; cheeks and throat blackish, with a few steel-green feathers on the latter; remainder of under surface of body from the fore-neck downwards dull cinnamon, lighter on the abdomen; under wing-coverts and

axillaries, as well as the under tail-coverts, black, with a slight gloss of purple; all the coverts round the bend of the wing, primary-coverts, and quills below white: "bill green; bare skin round the eye bright red; feet dark red; iris reddish" (*A. Grandidier*). Total length 28 inches, culmen 4·6, wing 12·7, tail 5·5, tarsus 2·8.

*Young.* Distinguished from the adults by the brown or sandy-brown edges to the coverts and quills; the latter also freckled with brown. The bare space round the eye more restricted and the feathers of the sides of the face dusky cinnamon; the head crested, as in the adults, but the feathers of the crown more or less distinctly centred with black. The disposition of the black plumes on the head appears to vary with individuals, as in one bird the feathers of the crown are almost entirely steel-blue, whereas another specimen has the coronal feathers sandy buff.

*Hab.* The same as that of the genus.

|                      |                                                      |                        |
|----------------------|------------------------------------------------------|------------------------|
| <i>a.</i> Ad. sk.    | Madagascar.                                          | Purchased.             |
| <i>b.</i> Imm. sk.   | Central Madagascar.                                  | H. Seebohm, Esq. [P.]. |
| <i>c.</i> ♂ juv. sk. | Forest of North Senbendra,<br>Madagascar, Dec. 4.    | M. A. Majastre [C.].   |
| <i>d.</i> ♂ juv. sk. | Bay of Bombatoc ( <i>Pollen &amp;<br/>Van Dam</i> ). | Shelley Coll.          |
| <i>e.</i> ♀ ad. sk.  | Ankafana Forest, June ( <i>Deans<br/>Cowan</i> ).    | Shelley Coll.          |
| <i>f.</i> Skeleton.  | Madagascar.                                          | Mr. J. Crossley [C.].  |

## . 15. CERCIBIS.

Cercibis, *Wagler, Isis*, 1832, p. 1232 ..... Type. *C. oxycerca*.

*Range.* Colombia to British Guiana and the Rio Negro in Upper Amazonia.

### 1. Cercibis oxycerca.

*Ibis oxycercus*, *Spir, Av. Bras.* p. 69, pl. 87 (1824); *Wagler, Syst. Av.* p. 376, *Ibis*, sp. 15 (1827); *Cab. in Schomb. Reis. Guian.* iii. p. 756 (1848); *Burm. Th. Bras.* iii. p. 424 (1856: Upper Amazon; Rio Negro); *Schl. Mus. Pays-Bas*, *Ibis*, p. 8 (1863); *Reichen. J. f. O.* 1877, p. 153.

*Cercibis oxycerca*, *Wagler, Isis*, 1832, p. 1232; *Bp. Consp.* ii. p. 156 (1855); *Scl. & Salv. Nomencl. Av. Neotr.* p. 127 (1873); *Elliot, P. Z. S.* 1877, p. 497; *Salvin, Ibis*, 1886, p. 171.

*Geronticus oxycercus*, *Gray, Gen. B.* iii. p. 566 (1847); *id. Hand-l. B.* iii. p. 41, no. 10236 (1871); *Pelz. Orn. Bras.* p. 307 (1871: Rio Guaporé).

*Adult male.* General colour above black, with only a slight green or purplish gloss, the latter more apparent on the wings and tail; the crown of the head feathered as well as the sides of the face and ear-coverts, but the lores and all the region of the eye bare, as well as the throat; the feathers of the hind-neck crested and glossed with purple, changing to green on the sides of the neck; the feathers on the fore part of the crown hoary whitish, as likewise a broad cheek-stripe; under surface of body dull black, with scarcely any gloss, the feathers ascending in a narrow line to a

point on the throat; under wing-coverts and axillaries black, with a purple gloss: "bill and naked face clear flesh-colour in life, the gape and region of the eye darker, the bill yellowish, with light brown tip; feet fleshy yellow" (*Burmeister*). Total length about 34 inches, culmen 6.5, wing 16, tail 11, tarsus 2.8.

*Adult female*. Similar to the male. Total length about 34 inches, culmen 6, wing 15.6, tail 10.5, tarsus 2.75.

*Hab.* The same as that of the genus.

- a. ♂ ad. sk. Rupurumi River, British Guiana, April 25 (*H. Whitely*). Salvin-Godman Coll.
- b. ♀ ad. sk. Aunai, British Guiana, Aug, 6 (*H. W.*). Salvin-Godman Coll.
- c. ♀ ad. sk. Forte do Rio Branco, April 10 (*J. Natterer*). Salvin-Godman Coll.
- d. Ad. sk. Interior of Colombia (*Crowther*). Salvin-Godman Coll.
- e. Ad. sk. S. America. - Old Coll.

## 16. PLEGADIS.

|                                                                                     | Type.                   |
|-------------------------------------------------------------------------------------|-------------------------|
| Plegadis, <i>Kaup, Natürl. Syst.</i> p. 82 (1829) .....                             | <i>P. falcinellus</i> . |
| Tantalides, <i>Wagler, Isis</i> , 1832, p. 1231 .....                               | <i>P. falcinellus</i> . |
| Falcinellus, <i>Gray, List Gen. B.</i> 1841, p. 87 ( <i>nec Vieill.</i> 1816) ..... | <i>P. falcinellus</i> . |
| Plegedornis, <i>Brehm, Naum.</i> 1855, p. 290 .....                                 | <i>P. falcinellus</i> . |

*Range*. Nearly the whole of the temperate portions of the Old and New Worlds, extending to Africa, India, and Australia, as well as South America.

### *Key to the Species.*

- a. With no streaks of whitish on the head and neck. (Adults in summer plumage.)
  - a'. Under surface of body deep rufous or chesnut-brown, as also the head and neck, mantle, and scapulars.
    - a''. With no white mark on the forehead and fore part of cheeks and chin; lores blackish in skin, greenish in life ..... *falcinellus*, p. 29.
    - b''. With a white band across the forehead, behind the eye, joining on the chin: lores reddish in skin, carmine-red in life ..... *guaruana*, p. 34.
  - b'. Under surface purplish black; head and neck reddish brown, not extending to the scapulars or mantle ..... *ridgwayi*, p. 37.
- b. With the head and neck streaked with whitish. (Young birds or adults in winter plumage.)

### 1. *Plegadis falcinellus*.

Le Courly verd, *Briss. Orn.* v. p. 326, pl. 27. fig. 2 (1760).

Le Courly marron, *Briss. t. c.* p. 329.

*Tantalus falcinellus*, *Linn. Syst. Nat.* i. p. 241 (1766); *Gm. Syst. Nat.* i. p. 648 (1788).

Courly d'Italie, *Daubent. Pl. Enl.* viii. pl. 819.

- Scolopax rufa*, Scop. *Ann.* i. p. 93 (1769).  
*Numenius igneus*, S. G. Gm. *Reis. Sibir.* i. p. 166 (1770).  
*Numenius viridis*, S. G. Gm. *t. c.* p. 167 (1770).  
*Tantalus castaneus*, P. L. S. Müll. *Syst. Nat., Anhang*, p. 112 (1776);  
*Cass. Pr. Phil. Acad.* 1864, p. 246.  
Le Courlis vert ou Courlis d'Italie, Buff. *Hist. Nat. Ois.* viii. p. 29 (1781).  
The Bay Ibis, Lath. *Gen. Syn.* iii. pt. 1, p. 113 (1785).  
The Bay Ibis, var. A, Lath. *t. c.* p. 114.  
Green Ibis, Lath. *t. c.* p. 114.  
Glossy Ibis, Lath. *t. c.* p. 114; Yarr. *Br. B.* iii. p. 505 (1843).  
*Tantalus viridis*, Gm. *Syst. Nat.* i. p. 648 (1788).  
*Tantalus igneus*, Gm. *t. c.* p. 648 (1788).  
Ibis sacra, Temm. *Man. d'Orn.* p. 385 (1815).  
Ibis falcinellus, Vieill. *N. Dict. d'Hist. Nat.* xvi. p. 23 (1817);  
Temm. *Man. d'Orn.* ii. p. 598 (1820); Wagler, *Syst. Av.*, Ibis,  
p. 367, sp. 1 (1827); Rour, *Orn. Provenç.* pl. 309 (1825); Werner,  
*Atlas*, Gralles, pl. 4 (1827); Less. *Traité*, p. 566 (1831); Ménétr.  
*Cat. rais. Cauc.* p. 50 (1832); Bp. *Amer. Orn.* iv. p. 23, pl. 23.  
fig. 1 (1833); Nutt. *Man.* ii. p. 88 (1834); Naum. *Vög. Deutschl.*  
viii. p. 339, pl. 219 (1836); Gould, *B. Eur.* iv. pl. 301 (1837);  
Aud. *B. Amer.* pl. 387; id. *Orn. Biogr.* iv. p. 608 (1838); Crespon,  
*Orn. Gard*, p. 402 (1840); Keys. & Blas. *Wirb. Eur.* p. 217 (1840);  
Nordm. in Démid. *Voy. Russ. Mérid.* p. 256 (1840: Odessa, May,  
Sept.); Selys-Longch. *Faune Belge*, p. 131 (1842: accidental);  
Audub. *B. Amer.* vi. p. 50, pl. 358 (1843); Schl. *Rev. Crit.* p. c.  
(1844); Hodgs. *Icon. ined. Brit. Mus., Grallæ*, pl. 77 (no. 571);  
id. in Gray's *Zool. Misc.* p. 86 (1844); Hewits. *Eggs Br. B.* ii.  
p. 283, pl. 78 (1846); Gray, *Gen. B.* iii. p. 565 (1847); Gould,  
*B. Austr.* vi. pl. 47 (1848); Lembeye, *Av. Cuba*, p. 87 (1850);  
Thomps. *B. Irel.* ii. p. 182 (1850); Macg. *Br. B.* iv. p. 493  
(1852); Kjærbo. *Orn. Dan.* pl. xxxiii. a. fig. 4 (1852); Schl. *Vög.*  
*Nederl.* pls. 201, 202 (1854); Salr. *Ibis*, 1859, p. 359 (Zana);  
Hartl. *Faun. Madag.* p. 77 (1861); id. *J. f. O.* 1861, p. 270;  
Schl. *Mus. Pays-Bas*, Ibis, p. 2 (1863, pt.: Hungary; Sarepta;  
Senegal; Sennaar; Lake Tana; Java; Borneo; N. Celebes);  
Wright, *Ibis*, 1864, p. 144 (Malta, migrant); Sperling, *t. c.*  
p. 287; Finsch, *Neu-Guinea*, p. 182 (1865); Ramsay, *Ibis*, 1866,  
p. 335 (Pt. Denison); Layard, *B. S. Afr.* p. 319 (1867); Sunder.  
*Svensk. Fogl.* pl. lxxviii. fig. 3 (1867); *Grand. Rev. et Mag. de Zool.*  
1868, p. 4; Schl. & Poll. *Faun. Madag., Ois.* ii. p. 128 (1868); Smith,  
*Ibis*, 1868, p. 454 (Portugal); Finsch & Hartl. *Vög. Ostaf.* p. 730  
(1870); Gray, *Hand-l. B.* iii. p. 39, no. 10214 (1871); Swinh. *P. Z. S.*  
1871, p. 411 (Shanghai; Ningpo); Allen, *Bull. Mus. C. Z.* 1871,  
p. 361 (Florida); Saunders, *Ibis*, 1871, p. 394 (S. Spain, breeding);  
Harting, *Handb. B. Gt. Br.* p. 54 (1872); Gould, *B. Gt. Br.* iv. pl. 47  
(1872); Shelley, *B. Egypt*, p. 262 (1872); Heugl. *Orn. N. O.-Afr.*  
ii. pt. 1, p. 1132 (1873: Egypt; Nubia; Kordofan; Senaar; Abyssinia;  
Tana Lake); Antin. & Salvad. *Viagg. Bogos*, p. 152 (1873: Anseba,  
Aug.); Severtz. *Turkest. Jevotn.* p. 68 (1873); Brooke,  
*Ibis*, 1873, p. 340 (Sardinia, winter); Hayes Lloyd, *t. c.* p. 419  
(Kathiawar); Thiellens, *Mém. Soc. Hainault*, (3) iii. p. 335 (1873:  
Belgium); Irby, *B. Gibr.* p. 59 (1875: Ras Doura); Danford &  
Harvie-Brown, *Ibis*, 1875, p. 426 (Transylvania); Dresser, *Ibis*,  
1876, p. 236 (Turkestan, breeding); Blanf. *East. Persia*, ii. p. 298  
(1876); David & Oust. *Ois. Chine*, p. 455 (1877); Hartl. *Vög.*  
*Madag.* p. 316 (1877); Finsch, *Ibis*, 1877, p. 52 (Ala-Kul); Ram-  
say, *Pr. Linn. Soc. N. S. W.* ii. p. 198 (1878); Maynard, *B. East.*



- N. Am.* p. 402 (1879); *Milne-Edw. & Grandid. H. N. Madag.*, *Ois.* ii. p. 259 (1882); *Holub & Pelz. Beitr. Orn. Südaf.* p. 291 (1882); *Sim, Scot. Nat.* vi. p. 13 (1882: Scotland); *Stearns, New England Bird Life*, ii. p. 254 (1883); *Seebohm, Ibis*, 1883, p. 32 (Caucasus); *Irby, t. c.* p. 188 (Santander, May); *Seebohm, Hist. Brit. B.* ii. p. 520 (1884); *Tristr. Faun. & Flor. Palest.* p. 112 (1884: occasional); *Saunders, ed. Yarr. Brit. B.* iv. p. 231 (1884); *Ramsay, Tab. List Austr. B.* p. 20 (1888); *Saunders, Man. Brit. B.* p. 379 (1889); *Lilford, Ibis*, 1889, p. 344 (Cyprus); *North, Pr. Linn. Soc. N. S. W.* (2) v. p. 142 (1891: Yandembah, N. S. W., breeding); *Madarász, Ausst. Ungar. Vög.* p. 107 (1891); *Frivaldsky, Av. Hung.* p. 116 (1891).
- Numenius chichi*, *Dumont, Dict. Sci. Nat.* xi. p. 253 (1818).
- Tantalus bengalensis*, *Licht., teste Bp.*
- Tantalus mexicanus*, *Ord, Journ. Philad. Acad.* i. p. 53 (1817: New Jersey).
- Numenius falcinellus*, *Pall. Zoogr. Rosso-Asiat.* ii. p. 165 (1811: Caspian Sea; Black Sea, breeding).
- Plegadis falcinellus*, *Kaup, Natürl. Syst.* p. 82 (1829); *Bp. C. R.* xl. p. 725 (1855); *Fritsch, Vög. Eur.* tab. 43. fig. 3 (1870); *Salvad. Faun. Ital. Ucc.* p. 247 (1871); *Dresser, B. Eur.* vi. p. 335, pl. 409 (1878); *Legge, B. Ceylon*, p. 1109 (1879); *D'Albert. & Salvad. Ann. Mus. Genov.* xiv. p. 146 (1879); *Ridgw. Proc. U.S. Nat. Mus.* iii. p. 198 (1880); *Scl. P. Z. S.* 1881, p. 828 (Hampshire); *Salvad. Orn. Papuasia*, iii. p. 382 (1882: Fly River; Torres Straits); *Coues, Check-l. N. Amer. B.* p. 105 (1882); *Seebohm, Ibis*, 1882, p. 224 (Astrakan, breeding); *Parker, Ibis*, 1883, p. 194 (Ceylon, Nov., Feb., breeding); *Baird, Brewer, & Ridgw. Water-B. N. Amer.* i. p. 94 (1884); *Eagle Clarke, Ibis*, 1884, p. 147 (Obedaka Bara, breeding); *Coues, Key N. Amer. B.* 2nd ed. p. 649 (1884); *Salvad. Ann. Mus. Genov.* (2) i. p. 231 (1884: Daimbi, Shoa, Nov.); *Reid, Ibis*, 1885, p. 250 (Marocco, breeding); *Ayres, t. c.* p. 349 (Transvaal, March); *Tait, Ibis*, 1887, p. 374 (Portugal); *Guillem. Ibis*, 1888, p. 111, 1889, p. 215 (Larnaka, Cyprus, April); *St. John, t. c.* p. 178 (S. Afghanistan); *Reichen. Syst. Verz. Vög. Deutschl.* p. 42 (1889); *Brusina, Motr. etc. (Orn. Croat.)* p. 74 (1890); *Oates, ed. Hume's Nests & Eggs*, iii. p. 231 (1890); *Seebohm, Ibis*, 1892, p. 22 (Heligoland); *Sibree, t. c.* p. 117 (Madagascar); *Shelley, Ibis*, 1894, p. 477 (Palombi R.).
- Ibis castanea*, *Brehm, Vög. Deutschl.* p. 606 (1831).
- Ibis cuprea*, *Brehm, t. c.* p. 1018 (1831).
- Tantalides falcinellus*, *Wagler, Isis*, 1832, p. 1231.
- Ibis ordi*, *Bp. Comp. List B. Eur. & N. Amer.* p. 49 (1838); *Baird, Cass., & Laur. B. N. Amer.* p. 685 (1858); *Lawr. Ann. Lyc. N. Y.* viii. p. 292 (1866: New York).
- Falcinellus igneus*, *Gray, List Gen. B.* p. 87 (1841); *id. List Grallæ Brit. Mus.* p. 92 (1844); *Rüpp. Syst. Uebers.* p. 122 (1845); *Gray, Cat. Mamm. etc. Nepal pres. Hodgs.* p. 136 (1846); *Gould, B. Austr.* vi. pl. 47 (1848); *Blyth, Cat. B. Mus. A. S. B.* p. 274 (1849: Calcutta); *Reichenb. Vög. Neuhol.* p. 24 (1850); *Bp. Consp.* ii. p. 158 (1855); *Heugl. Syst. Uebers.* p. 62 (1856); *Gray, P. Z. S.* 1858, p. 197; *id. Cat. Mamm. & B. New Guinea*, p. 62 (1859); *Tristr. Ibis*, 1860, p. 163 (Lake Halloula, breeding); *Irby, Ibis*, 1861, p. 243 (Oudh); *Simpson, t. c.* p. 371 (Dobrudscha); *Jerd. B. Ind.* ii. p. 770 (1864); *Rosenb. J. f. O.* 1864, p. 137; *Newt. Ibis*, 1864, p. 133 (S. Iceland); *Kirk, t. c.* p. 334 (Zambesi); *Gould, Handb. B. Austr.* ii. p. 286 (1865); *Gigl. Ibis*, 1865, p. 60 (Pisa, April; San Rossore, May); *Gurney, t. c.* p. 272 (Monocusi

- River); *Ramsay, Ibis*, 1866, p. 335 (Pt. Denison); *Degl. & Gerbe, Orn. Eur.* ii. p. 329 (1867); *Loche, Expl. Sci. Algér., Ois.* ii. p. 154 (1867); *Baird, Ibis*, 1867, p. 282; *Drake, t. c.* p. 430 (Tetuan); *Tristr. Ibis*, 1868, p. 326; *Diggles, Orn. Austr.* ii. pl. 103 (1868); *Elwes & Buckley, Ibis*, 1870, p. 335 (Danube); *Ayres, Ibis*, 1871, p. 266 (Transvaal); *Walden, Tr. Z. S.* viii. p. 101 (1872: Gorontalo; Macassar); *Hume, Nests & Eggs Ind. B.* p. 635 (1873); *id. Str. F.* i. pp. 120, 257 (1873: Sind); *Ball, Str. F.* ii. p. 436 (1874: Chota Nagpur); *Salvad. Ucc. Born.* p. 360 (1874); *Blyth, B. Burm.* p. 158 (1875); *Butler & Hume, Str. F.* iv. p. 25 (1876: Sind; Kathiawar; Cutch; Jodhpur); *Butler, Str. F.* v. p. 233 (1877: Deesa); *Elliot, P. Z. S.* 1877, p. 503; *Davidson & Wenden, Str. F.* vii. p. 92 (1878: Deccan); *Butler, t. c.* p. 188 (E. Nassa); *Ball, t. c.* p. 231 (Rajmehal Hills; Maunbhoom); *Cripps, t. c.* p. 310 (Faridpur); *Hume, t. c.* p. 419 (Calcutta); *id. Str. F.* viii. p. 114 (1879); *Doig, t. c.* pp. 372, 377 (E. Narra, breeding); *Butler, Cat. B. Sind etc.* p. 72 (1879); *id. Cat. B. S. Bomb. Pres.* p. 85 (1880); *Hume, Str. F.* ix. p. 259 (1880: Cachar; Sylhet); *Reid, Str. F.* x. p. 78 (1881: Lucknow); *Bocage, Orn. Angola*, p. 458 (1881: Huilla; Humbe); *Biddulph, Ibis*, 1882, p. 289 (Gilgit); *C. Swinhoe, t. c.* p. 123 (Afghanistan, May; Quetta); *Murray, Vertebr. Faun. Sind*, p. 279 (1884: breeding); *Swinh. & Barnes, Ibis*, 1885, p. 136 (Mhow); *Everett, Tr. As. Soc. Straits Branch*, 1889, p. 191 (Borneo); *Bennett, Proc. Linn. Soc. N. S. W.* (2) iv. p. 1059 (1890: Lower Lachlan, breeding); *Reiser, Vogels. Mus. Sarajevo*, p. 109 (1891).
- Falcinellus bengalensis*, *Bp. Consp.* ii. p. 158 (1855: *ex Licht. MSS.*).
- Falcinellus peregrina*, *Bp. t. c.* p. 159 (1855: *ex Müll. MSS. in Mus. Lugd.*).
- Falcinellus ordi*, *Bp. t. c.* p. 159 (1855); *Brewer, Proc. Bost. Soc. N. H.* vii. p. 308 (1860: Cuba); *Gundl. J. f. O.* 1875, p. 318; *id. Ann. Soc. Esp. Hist. Nat.* vii. p. 366 (1878: Porto Rico).
- Plegadis bengalensis*, *Bp. C. R.* xl. p. 725 (1855).
- Plegadis peregrinus*, *Bp. C. R.* xl. p. 725 (1855).
- Plegadornis falcinellus*,  
*Plegadornis major*,  
*Plegadornis minor*,  
} *Brehm, Naum.* 1855, p. 290.
- Falcinellus erythrorhynchus*, *Cab. J. f. O.* 1856, p. 349 (Cuba);  
*Gundl. J. f. O.* 1882, p. 84.
- Ibis peregrina*, *Gray, P. Z. S.* 1860, p. 364.
- Falcinellus autumnalis*, *Doderl. Avif. Sicil.* p. 220 (1869).
- Ibis falcinellus*, var. *ordi*, *Coues, B. N.-West*, p. 517 (1874); *id. Key N. Amer. B.* p. 263 (1872).
- Ibis (Falcinellus) igneus*, *Ramsay, P. Z. S.* 1877, p. 340 (N.E. Queensland).
- Ibis falcinellus*, var. *peregrina*, *Brüggem. Abhandl. nat. Ver. Bremen*, v. p. 98 (1876).
- Ibis igneus*, *D'Albert. Ann. Mus. Genov.* x. p. 20 (1877: Fly River).
- Falcinellus rufus*, *Reichen. J. f. O.* 1877, p. 146.
- Falcinellus falcinellus*, *Sharpe, ed. Layard's B. S. Afr.* p. 741 (1884: Zeekoe Vley, nr. Cape Town); *Reichenow, Vög. Deutsch-Ost-Afr.* p. 55 (1894: Tanganyika; Ugalla).
- Plegadis autumnalis*, *Stejn. Stand. Nat. Hist.* iv. p. 160 (1885);  
*A. O. U. Check-l. N. Amer. B.* p. 132 (1886); *Ridgw. Man. N. Amer. B.* p. 124 (1887); *Cory, B. W. Ind.* p. 242 (1889); *id. Cat. B. W. Ind.* p. 88 (1892).



*Adult.* General colour above black, with varying glossy reflections, either bronzy purple or green; upper mantle deep maroon-chestnut, as also the lesser wing-coverts and scapulars, the latter having bronzy tips; median and greater coverts duller and more oily green, with bronze or steel-green reflections; bastard-wing, primary-coverts, and quills entirely glossy green, the secondaries with purplish reflections; lower back, rump, upper tail-coverts, and tail all black, with various reflections of purple and oily or bronzy green; head and neck all round, as well as the under surface of the body, deep maroon-chestnut, somewhat lighter on the chest and breast; forehead and fore part of crown glossy green, as also the base of the cheeks and a slight shade below the eye; under tail-coverts and under wing-coverts and axillaries black, with metallic reflections of green and purple, the quill-lining similarly glossed: "bill dark brownish olive; feet also dark brownish olive; iris brown" (*Guillemard*). Total length 22 inches, culmen 5·2 wing 11·2, tail 3·9, tarsus 4·2.

The *female* is similar to the male in plumage, but is smaller in size and with a somewhat smaller bill.

The winter plumage would appear to be adopted after the bird has left for its winter-quarters, as a male killed in Celebes on the 20th of August is still in full red plumage. The winter plumage of the adults appears to consist in the entire loss of the chestnut plumage of the head, back, and scapulars; the rest of the plumage remains metallic with the same varying shades of green and purple, but the wings are rather more bronzy and the wing-coverts brighter metallic green. The head and neck are entirely streaked with black and whitish, and in the spring the red feathers of the summer plumage are gained by a moult.

*Young birds* are similar to the winter plumage of the adult, but are more of a metallic oil-green, without the beautiful shades which distinguish the adults at all seasons. The head is dusky brown, with a certain amount of white striping on the head and throat, but not so much as in the adult winter plumage.

*Hab.* Southern Europe and the Mediterranean countries. Accidental to the northward, ranging east to Persia, Turkestan, and Afghanistan to the Indian Peninsula, China, and Siam, south to Borneo, Java, Celebes, New Guinea, and Australia. In Africa, found in Egypt, throughout north-east Africa to Shoa, Senegambia, and South Africa. Eastern United States to Florida.

|               |                                                                 |                                 |
|---------------|-----------------------------------------------------------------|---------------------------------|
| a. Ad. sk.    | South Spain.                                                    | Lord Lilford [P.].              |
| b. Ad. st.    | Spain.                                                          | Purchased.                      |
| c. Ad. sk.    | Hungary, April.                                                 | Hungarian National Museum [P.]. |
| d. Juv. sk.   | Tangier ( <i>Drummond Hay</i> ).                                | Gould Coll.                     |
| e. Ad. sk.    | Island of Cerigo, Mediterranean Sea ( <i>Capt. T. Graves</i> ). | Gould Coll.                     |
| f. g. Ad. st. | Athens.                                                         | Consul Merlin [P.].             |
| h. ♂ ad. sk.  | Larnaka, Cyprus, April 3.                                       | Lord Lilford [P.].              |
| i. ♂ ad. sk.  | Egypt, April 22 ( <i>G. E. S.</i> ).                            | Shelley Coll.                   |
| j. Juv. sk.   | Gambia.                                                         | Rev. D. F. Morgan [P.].         |

|                                                    |                                                                  |                                  |
|----------------------------------------------------|------------------------------------------------------------------|----------------------------------|
| <i>k.</i> Juv. sk.                                 | Angola.                                                          | Monteiro Coll.                   |
| <i>l, l'.</i> ♂ ad., ♀ juv. sk.                    | Palombe River, Nyasa-land, Oct. ( <i>A. Whyte</i> ).             | H. H. Johnston, Esq., C.B. [P.]. |
| <i>m.</i> ♀ ad. sk.                                | Potchefstroom, Transvaal, July 10 ( <i>T. Ayres</i> ).           | Gurney Coll.                     |
| <i>n.</i> Juv. sk.                                 | South Africa.                                                    | Sir A. Smith [C.].               |
| <i>o, p.</i> ♂ ad.; <i>q.</i> ♀ imm. sk.           | N.E. Madagascar.                                                 | Messrs. Pollen & Van Dam [C.].   |
| <i>r, s.</i> Juv. sk.                              | N.E. Madagascar.                                                 | Shelley Coll.                    |
| <i>t.</i> Juv. sk.                                 | Persia.                                                          | Kenneth Loftus, Esq. [P.].       |
| <i>u.</i> Juv. sk.                                 | Mesopotamia ( <i>Commander Jones</i> ).                          | India Museum.                    |
| <i>v, w.</i> Ad.; <i>x.</i> Juv. sk.               | Afghanistan ( <i>Griffith</i> ).                                 | India Museum.                    |
| <i>y.</i> ♂ ad. sk.                                | Candahar, April 22.                                              | Hume Coll.                       |
| <i>z.</i> ♂ ad. sk.                                | Cushdukhan, Afghanistan, May 2.                                  | Colonel Swinhoe [P.].            |
| <i>a'.</i> Juv. sk.                                | Quetta ( <i>O. T. Duke</i> ).                                    | Hume Coll.                       |
| <i>b'.</i> ♂ juv. sk.                              | Pishin, Aug. 27.                                                 | Hume Coll.                       |
| <i>c'.</i> ♂ ad. sk.                               | Sind, Feb. ( <i>Dr. H. Gould</i> ).                              | Gould Coll.                      |
| <i>d', e', f'.</i> ♂ ad.; <i>g', h'.</i> ♀ ad. sk. | Larkhana, Upper Sind, Jan. 8 ( <i>A. O. H.</i> ).                | Hume Coll.                       |
| <i>i'.</i> Juv. sk.                                | Sukkur, Nov. 26.                                                 | Hume Coll.                       |
| <i>k'-m'.</i> ♂ imm. sk.                           | Gurgaon Distr., May, July, Sept. ( <i>W. N. Chill</i> ).         | Hume Coll.                       |
| <i>n', o'.</i> Ad. sk.                             | Etawah.                                                          | Hume Coll.                       |
| <i>p'-u'.</i> Ad. sk.                              | Oudh, Jan., March.                                               |                                  |
| <i>r', w', x'.</i> Ad. sk.                         | Nepal.                                                           | Hodgson Coll.                    |
| <i>y'.</i> ♀ juv. sk.                              | Cachar, Sept. 27 ( <i>J. Inglis</i> ).                           | Hume Coll.                       |
| <i>z'-b''.</i> Ad. sk.                             | Dacca.                                                           | Hume Coll.                       |
| <i>c'', d''.</i> Ad. sk.                           | Calcutta.                                                        | Hume Coll.                       |
| <i>e'', f''.</i> Ad. sk.                           | Deccan ( <i>Sykes</i> ).                                         | India Museum.                    |
| <i>g''.</i> Ad. sk.                                | Khandeish ( <i>J. Davidson</i> ).                                | Hume Coll.                       |
| <i>h'', i''.</i> ♂ ♀ ad. sk.                       | Madras.                                                          | Hume Coll.                       |
| <i>k''.</i> ♀ ad. sk.                              | Coimbatore, Oct. 31.                                             | Hume Coll.                       |
| <i>l''.</i> Ad. sk.                                | Dai Mountains, Siam, Dec. 6.                                     | M. E. Pierre [P.].               |
| <i>m''.</i> ♂ ad. sk.                              | Ayer Pannas, Celebes ( <i>Von Rosenberg</i> ).                   | Salvin-Godman Coll.              |
| <i>n'', o''.</i> Ad. et juv. sk.                   | Queensland ( <i>J. T. Cockerell</i> ).                           | Salvin-Godman Coll.              |
| <i>p''.</i> Ad. sk.                                | Port Essington.                                                  | Capt. Chambers [P.].             |
| <i>q'', r''.</i> Ad. et imm. sk.                   | South Australia.                                                 | Sir G. Grey [P.].                |
| <i>s'', t''.</i> ♂ ♀ imm. sk.                      | Coffee Mill Hammock, Florida, Jan. 15 ( <i>W. E. D. Scott</i> ). | Salvin-Godman Coll.              |
| <i>u'', v''.</i> Ad. sk.                           | Do Soto Co., Florida ( <i>W. R. Dean</i> ).                      | Salvin-Godman Coll.              |
| <i>w'', x''.</i> Sterna.                           | Algeria.                                                         | Purchased.                       |

## 2. *Plegadis guarauna*.

Le Courly brun d'Amérique, *Briss. Orn.* v. p. 330 (1760).

? Le Courly varié du Mexique, *Briss. t. c.* p. 333 (1760).

*Scolopax guarauna*, *Linn. S. N.* i. p. 242 (1766).

? L'Acalot, *Buff. Hist. Nat. Ois.* viii. p. 45 (1781).

- ? Mexican Ibis, *Lath. Gen. Syn.* iii. pt. 1, p. 108 (1785).  
 Brazilian Whimbrel, *Lath. Gen. Syn.* iii. pt. 1, p. 125 (1785).  
*Tantalus mexicanus*, *Gm. S. N.* i. p. 652 (1788).  
*Numenius guarauna*, *Lath. Ind. Orn.* ii. p. 712 (1790).  
 Curucáu cuello jaspeado, *Azara, Apunt.* iii. p. 197 (1805).  
*Numenius chihi*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 303 (1817, ex *Azara*).  
 ? Ibis mexicana, *Vieill. N. Dict. d'Hist. Nat.* xvi. p. 9 (1817).  
*Ibis guarauna*, *Licht. Verz. Doubl.* p. 75 (1823: Montevideo); *Wagler, Syst. Av.*, Ibis, p. 185, sp. 8 (1827); *id. Isis*, 1829, p. 759; *Hartl. Ind. Azara*, p. 23 (1847); *Gray, Gen. B.* iii. p. 565 (1847); *Cabot, Proc. Bost. Soc. N. H.* iii. p. 313 (1850, pt.); *Licht. Nomencl. Av. Mus. Berol.* p. 91 (1854); *Burm. Th. Bras.* iii. p. 425 (1856); *Cass. U.S. Expl. Exped.* p. 302 (1858: Chili); *id. in Baird, Cassin, & Lawr. B. N. Amer.* pl. 87 (1858); *Baird, Ibis*, 1867, p. 271; *Ridgw. Am. Nat.* viii. p. 110 (1874); *Hensh. Rep. Zool. Expl. 100th Merid.* p. 463 (1875: Arizona); *Allen, Bull. Mus. C. Z.* iii. p. 356 (1876); *Gray, Hand-l. B.* iii. p. 39, no. 10215 (1871); *Breuer, Ibis*, 1878, p. 116 (Rio Grande, breeding).  
*Tantalus chalcopterus* (nec V.), *Temm. Pl. Col.* v. pl. 51 (1830).  
*Tantalus guarauna*, *Wagler, Isis*, 1832, p. 1231.  
*Ibis erythrorhyncha*, *Gould, P. Z. S.* 1837, p. 127 (Haiti).  
*Ibis* (*Falcinellus*) *ordi*, *Darwin, Voy. 'Beagle,'* p. 129 (1841: Rio Negro; Bahia Blanca; Buenos Ayres).  
*Falcinellus guarauna*, *Gray, List Grallæ Brit. Mus.* p. 93 (1844: Mexico, Valparaiso); *Bp. Consp.* ii. p. 159 (1855); *Allen, Bull. Mus. C. Z.* iii. p. 356 (1876); *Elliot, P. Z. S.* 1877, p. 505; *Sennett, Bull. U.S. Geol. Surv.* iv. p. 56 (1878).  
*Ibis brevirostris*, *Peale, U.S. Expl. Exped., Birds*, p. 219 (1848: River Rimac, Peru).  
*Plegadis guarauna*, *Bp. C. R.* xl. p. 725 (1855); *Merrill, Pr. U.S. Nat. Mus.* i. p. 163 (1878); *Belding, t. c.* p. 443 (California); *Gibson, Ibis*, 1880, p. 160 (Buenos Ayres, resident); *Ridgw, Pr. U.S. Nat. Mus.* iii. p. 198 (1880); *Coues, Check-list N. Amer. B.* p. 105 (1882); *Belding, Pr. U.S. Nat. Mus.* v. pp. 545, 548 (1883: Lower California); *Coues, Key N. Amer. B.* 2nd ed. p. 649 (1884); *Baird, Breuer, & Ridgw. Water-B. N. Amer.* i. p. 97 (1884); *Cory, List B. W. Ind.* p. 27 (1885); *Drew, Auk*, ii. p. 25 (1885: Colorado); *Holterhoff, Auk*, ii. p. 311 (1885: San Diego); *Ferrari-Perez, Pr. U.S. Nat. Mus.* ix. p. 171 (1886: Puebla, Tlaxcala); *A. O. U. Check-l. N. Amer. B.* p. 132 (1886); *Everm. Auk*, iii. p. 91 (1886: Ventura Co.); *Scott, t. c.* p. 385 (Arizona); *Brewster, t. c.* p. 481 (1886: breeding on St. John's River, Florida); *Stejn. Pr. U.S. Nat. Mus.* x. p. 84 (Kauai); *Towns. t. c.* pp. 196, 234 (N. California, 1000 ft.); *Beckh. t. c.* pp. 641, 648; *Ridgw. Man. N. Amer. B.* p. 124 (1887: Texas and Lower California to Oregon); *Withington, Ibis*, 1888, p. 471 (Lomas de Zamora); *Cory, B. W. Ind.* p. 243, note (1889); *Scl. & Hudson, Argent. Orn.* ii. p. 109 (1889); *Holland, Ibis*, 1890, p. 425; *Mearns, Auk*, vii. p. 51 (1890: Mormon Lake, Arizona); *Graham Kerr, Ibis*, 1891, p. 270, 1892, p. 145 (River Pilcomayo, Sept.); *Goss, Auk*, viii. p. 112 (1891: Kansas); *Holland, Ibis*, 1892, p. 205 (Est. Espartilla, resident); *Cory, Cat. B. W. Ind.* pp. 88, 137 (1892); *Attwater, Auk*, ix. p. 345 (1892); *Anthony, t. c.* p. 360 (1892: Apache).  
*Ibis ordi* (nec Bp.), *Cass. in Baird, Cass., & Lawr. B. N. Amer.* p. 635 (1858); *Coues, Ibis*, 1865, p. 165 (Ft. Whipple); *Dresser, Ibis*, 1866, p. 96 (Matamoras, Aug.); *Baird, Ibis*, 1867, p. 271.

- Ibis chalcoptera* (nec V.), *Burm. La Plata Reis.* ii. p. 511 (partim).  
*Ibis falcinellus* (nec L.), *Schl. Mus. Pays-Bas*, *Ibis*, p. 2 (1863, pt. : Chili, Mexico, Brazil); *Hudson, P. Z. S.* 1870, p. 799 (breeding at Gualicho, 170 miles S. of Buenos Ayres); *Pelz. Orn. Bras.* p. 306 (1871: Ypanema, Oct.; Pansecco, June; Caiçara, March, April; Lagoa de Campina, May to Oct.).  
*Falcinellus ordi*, *Coues, Proc. Philad. Acad.* 1866, p. 96 (New Mexico, Arizona, Colorado).  
*Ibis falcinellus*, var. *ordi*, *Coues, Key N. Amer. B.* p. 263 (1872); *id. B. N.-West*, p. 517 (1874).  
*Falcinellus igneus* (nec Gm.), *Scl. & Salv. Nomencl. Av. Neotr.* p. 126 (1873, pt.); *Durnf. Ibis*, 1876, p. 162 (Buenos Ayres); *id. Ibis*, 1877, p. 189 (Buenos Ayres, resident).  
*Ibis thalassina*, *Ridgw. Amer. Nat.* viii. p. 110 (1874); *Allen, Bull. Mus. C. Z.* iii. p. 356 (1876); *Hensh. Rep. Zool. Expl. 100th Merid.* p. 464 (1875: Arizona).  
*Falcinellus thalassinus*, *Elliot, P. Z. S.* 1877, p. 507.  
*Plegadis falcinellus* (nec L.), *Barrows, Auk*, i. p. 272 (1884: Lower Uruguay).

*Adult male.* Similar to *P. falcinellus*, but distinguished by the reddish lores and reddish base of chin (these parts being lake-red in life), and by the white facial band, which forms a sort of mask across the forehead, round the eye, and along the fore part of the cheeks and across the chin: "bill dusky, sometimes tinged with reddish; lores, eyelids, and naked skin of chin lake-red or pale carmine; legs and feet varying from greyish brown to deep lake-red; iris crimson" (*Ridgway*). Total length 21 inches, culmen 5.4, wing 10.7, tail 3.6, tarsus 4.1.

*Adult female.* Similar to the male, but smaller, and with a shorter bill. Total length 20 inches, culmen 4.1, wing 9.8, tail 3.7, tarsus 3.2.

*Winter plumage and young plumage* are exactly analogous to those of *Plegadis falcinellus*. The young birds are uniform green above, with very short bills, and the commencement of the finer plumage is noticeable in several examples from Southern Brazil, procured in the winter habitat of the species. The wing-coverts, as pointed out by Mr. Ridgway, have no chestnut in the immature birds, and the bill is "pale greenish horn-blue, blackish terminally and dusky basally; legs and feet deep black; iris hazel."

*Hab.* Southern United States and Mexico, to Oregon on the west coast, to Texas and the St. John's River in Florida on the east; Southern Brazil, Chili, and Patagonia; St. Domingo, and Sandwich Islands.

- |                      |                               |                     |
|----------------------|-------------------------------|---------------------|
| a. ♂ juv. sk.        | Warner Lake, Oregon, Sept. 6  | Salvin-Godman Coll. |
|                      | (H. W. Henshaw).              |                     |
| b, c. ♂ ad. sk.      | Washoe Lake, Nevada, May,     | Salvin-Godman Coll. |
|                      | June (H. W. Henshaw).         |                     |
| d, e, f. Ad. sk.     | Texas (F. B. Armstrong).      | Salvin-Godman Coll. |
| g-n. ♂ ad.; o, p, q. | Brownsville, Texas, March,    | Salvin-Godman Coll. |
| ♀ ad. sk.            | April, May (F. B. Armstrong). |                     |
| r, s. ♀ ad. sk.      | Corpus Christi, May (F. B.    | Salvin-Godman Coll. |
|                      | Armstrong).                   |                     |

|                                               |                                                  |                                          |
|-----------------------------------------------|--------------------------------------------------|------------------------------------------|
| <i>t, u.</i> ♂ ad ; <i>v.</i> ♀ ad. hiem. sk. | Corpus Christi, Oct., Dec. (F. B. Armstrong).    | Salvin-Godman Coll.                      |
| <i>w.</i> Ad. hiem. sk.                       | Mexico (White).                                  | Salvin-Godman Coll.                      |
| <i>x.</i> Juv. st.                            | Mexico.                                          | John Taylor, Esq. [P.].                  |
| <i>y, z.</i> ♂ ♀ ad. hiem. sk.                | Presidio, Mexico, Jan., Feb. (A. Forrer).        | Salvin-Godman Coll.                      |
| <i>a'.</i> Ad. hiem. sk.                      | Buenos Ayres (Withington).                       | Sclater Coll.                            |
| <i>b'.</i> ♀ ad. hiem. sk.                    | La Plata, Buenos Ayres, Nov. (E. W. White).      | Salvin-Godman Coll.                      |
| <i>c'.</i> ♀ juv. sk.                         | Punta Lara, Buenos Ayres, Feb. 26 (E. W. White). | Salvin-Godman Coll.                      |
| <i>d'.</i> ♀ ad. hiem. sk.                    | Salta, Arg. Rep., Oct. 22 (E. W. White).         | Salvin-Godman Coll.                      |
| <i>e'.</i> ♂ ad. hiem. sk.                    | Pelotas, Rio Grande do Sul (Joyner).             | Salvin-Godman Coll.                      |
| <i>f'.</i> Ad. hiem. sk.                      | Rio de Janeiro.                                  | M. Hardy [C.].                           |
| <i>g'.</i> Ad. hiem. st.                      | Valparaiso.                                      | Sir W. Burnett and Admiral Fitzroy [P.]. |
| <i>h'-k'.</i> Ad. æstiv. sk.                  | Central Chili.                                   | Berkeley James Coll.                     |
| <i>l'.</i> Juv. sk.                           | Straits of Magellan (Capt. King).                | Salvin-Godman Coll.                      |
| <i>m'.</i> Skeleton.                          | Chili.                                           | Purchased.                               |

### 3. *Plegadis ridgwayi*.

*Ibis ordi* (nec Bp.), *Tschudi & Cab. Faun. Peruan.* pp. 51, 298 (1845-46: Peru).

*Ibis falcinellus* (nec L.), *Scl. & Salv. P. Z. S.* 1869, p. 156 (Tungu-saca).

*Falcinellus igneus* (nec Gm.), *Scl. & Salv. Nomencl. Av. Neotr.* p. 126 (1873, pt.).

*Falcinellus ridgwayi*, *Allen, Bull. Mus. C. Z.* iii. p. 355 (1876: Lake Titicaca); *Elliot, P. Z. S.* 1877, p. 506; *Taczan. Orn. Pérou*, iii. p. 416 (1886: Junin).

*Falcinellus ordi* (nec Bp.), *Tacz. P. Z. S.* 1874, p. 562.

**Adult male.** General colour above glossy purple, with greenish reflections, the wing-coverts almost entirely metallic grass-green, the bastard-wing, primary-coverts, and primaries dark steel-green; the secondaries more purplish, like the back and scapulars; tail dark green, with purplish reflections; head and neck all round dull reddish brown, with no white on the forehead; the hind-neck more dusky, and merging into the purple of the back; the entire under surface of body from the fore-neck downwards purplish black; the under wing-coverts, axillaries, lower aspect of quills, and tail-feathers glossy green, with purplish reflections: "bill reddish slate-colour; legs and toes black; iris crimson lake" (H. Whitely). Total length 22 inches, culmen 5, wing 11.3, tail 4.4, tarsus 3.6.

**Adult female.** Similar to the male, but smaller. Total length 18.5 inches, culmen 3.4, wing 10.4, tail 4.1, tarsus 2.5.

**Winter plumage.** Possesses all the bright colours of the adult, except on the head and neck, which are heavily streaked with white and blackish brown.

*Young.* Similar to the winter plumage of the adult, the head and neck being streaked with whitish, and the purple of the under surface with a slight admixture of reddish here and there; the thighs distinctly reddish: "bill paler brown than in the adults; iris dark brown."

*Hab.* Peru and Bolivia.

|                   |                                                   |                     |
|-------------------|---------------------------------------------------|---------------------|
| a. Ad. sk.        | [Peru.]                                           | Old Coll.           |
| b. ♂ hiem. sk.    | Tungasuca, Peru, May 20<br>( <i>H. Whitely</i> ). | Salvin-Godman Coll. |
| c, d. ♂ ♀ ad. sk. | Langui, Peru, Feb. 22 ( <i>H. Whitely</i> ).      | Salvin-Godman Coll. |
| e, f. ♀ ad. sk.   | Junin, Peru, May ( <i>Jelski</i> ).               | Warsaw Museum [E.]. |
| g. Ad. hiem. sk.  | Bolivia ( <i>Forbes</i> ).                        | Salvin-Godman Coll. |

## 17. LAMPTRIBIS.

*Lampribus*, *Elliot*, *P. Z. S.* 1877, p. 507 ..... Type. *L. olivacea*.

*Range.* Forest districts of West Africa.

### 1. *Lampribus olivacea*.

*Ibis olivacea*, *Du Bus*, *Bull. Acad. Bruxelles*, 1837, p. 105; *id. Esq. Orn.* i. tab. 3 (1845); *Reichen. J. f. O.* 1877, p. 507; *Büttik. Notes Leyden Mus.* vii. p. 243 (1885: Liberia), x. p. 101 (1888), xi. pp. 127, 136 (1889).

*Hagedashia olivacea*, *Bp. Consp.* ii. p. 153 (1855).

*Geronticus olivaceus*, *Hartl. Orn. W.-Afr.* pp. 231, 275 (1857: Muni River); *Cass. Proc. Philad. Acad.* 1859, p. 174 (Moonda R.; Camma R.); *Hartl. J. f. O.* 1861, p. 271; *Dohrn, P. Z. S.* 1866, p. 330 (Prince's Isl.).

*Bostrychia ochracea*, *Bp. C. R.* xl. p. 725 (1855).

*Lampribus olivacea*, *Elliot, P. Z. S.* 1877, p. 507, pl. li.

*Comatibus olivacea*, *Oust. N. Arch. Mus.* (2) ii. p. 145 (1879).

*Theristicus olivaceus*, *Reichen. J. f. O.* 1890, p. 108 (Upper Cameroons, breeding).

*Adult.* General colour above dark grass-green; the lower back, rump, and upper tail-coverts black, washed with bluish green; tail purplish black, washed externally with green; lesser and median wing-coverts rosy purple, with green reflections; greater coverts and quills black, glossed with purple, the inner secondaries green, like the back; crown of head dusky green, the long crest-feathers centred longitudinally with cinnamon-buff; lores and region of the eye bare; sides of face, cheeks, and upper throat dusky brown; sides of neck, hind-neck, and under surface of body cinnamon-brown, all the feathers broadly edged with dull green or greenish brown; under tail-coverts, under wing-coverts, and axillaries black, glossed with green, the latter with purplish reflections; lower surface of quills bronzy brown: "naked parts of head black; feet dirty yellow; iris dark brown" (*H. Dohrn*). Total length 19 inches, culmen 4·7, wing 10, tail 4·3, tarsus 2·1.

*Young.* Similar in plumage to the adult, but much duller in every respect, the cinnamon streaking not so strongly pronounced.

*Hab.* West Africa, from Liberia to Gaboon; Prince's Island.

|                       |                                                                 |               |
|-----------------------|-----------------------------------------------------------------|---------------|
| a, b. Ad. et juv. sk. | R. Orfee, Denkera, Ashantee,<br>Nov. 5 ( <i>H. T. Ussher</i> ). | Shelley Coll. |
| c. Ad. sk.            | R. Orfee, Denkera ( <i>Aubinn</i> ).                            | Sharpe Coll.  |

## 18. EUDOCIMUS.

|                                                                       | Type.             |
|-----------------------------------------------------------------------|-------------------|
| <i>Eudocimus</i> , <i>Wagler, Isis</i> , 1832, p. 1232 .....          | <i>E. albus</i> . |
| <i>Guara</i> , <i>Reichenb. Av. Syst. Nat.</i> p. xiv (1852) .....    | <i>E. ruber</i> . |
| <i>Leucibus</i> , <i>Reichenb. Av. Syst. Nat.</i> p. xiv (1852) ..... | <i>E. albus</i> . |

*Range.* Southern United States, seldom found to the northward (to Indiana and Connecticut).

1. *Eudocimus albus*.

The White Curlew, *Catesby, N. H. Carol.* i. p. 82, pl. 82 (1731).

Le Courly blanc du Brésil, *Briss. Orn.* v. p. 339 (1760).

*Tantalus albus*, *Linn. Syst. Nat.* i. p. 242 (1766); *Gm. Syst. Nat.* i. p. 651 (1788); *Ord in Wilson, Amer. Orn.* viii. p. 43, pl. 66. fig. 3 (1814).

Courly blanc d'Amérique, *Daubent. Pl. Enl.* viii. pl. 195.

Le Courlis blanc, *Buff. Hist. Nat. Ois.* viii. p. 41 (1781).

*Scolopax alba*, *Bodd. Tabl. Pl. Enl.* p. 55 (1783).

*Tantalus coco*, *Jacquin, Beitr.* p. 13 (1784).

White Ibis, *Lath. Gen. Syn.* iii. pt. 1, p. 111 (1785); *Nutt. Man.* ii. p. 86 (1834).

*Tantalus griseus*, *Gm. Syst. Nat.* i. p. 653 (1788).

*Ibis alba*, *Vieill. N. Dict.* xvi. p. 16 (1817); *Jard. ed. Wilson, Amer. Orn.* iii. p. 64, pl. 66. fig. 3 (1832); *Audub. B. Amer.* pl. 222; *id. Orn. Biogr.* iii. p. 173 (1835), iv. p. 593 (1839); *id. B. Amer.* vi. p. 54, pl. 360 (1843); *Gray, List Grallæ Brit. Mus.* p. 91 (1844); *id. Gen. B.* iii. p. 565 (1847); *Denny, P. Z. S.* 1847, p. 39 (Jamaica); *Lembeye, Av. Cuba*, p. 86 (1850); *Burm. Th. Bras.* iii. p. 426 (1856: Amazon, Rio Negro); *Cass. in Baird, Cass., & Lawr. B. N. Amer.* p. 628 (1858); *G. C. Taylor, Ibis*, 1860, p. 313 (Belize); *id. Ibis*, 1862, p. 201 (Florida); *Schl. Mus. Pays-Bas, Ibis*, p. 5 (1863); *March, Proc. Philad. Acad.* 1864, p. 65 (Jamaica); *Salvin, Ibis*, 1865, p. 192 (Guatemala); *Gundl. Rep. Soc. Phys. Nat. Cuba*, i. p. 352 (1866); *Dresser, Ibis*, 1866, p. 32 (S. Texas); *Gray, Hand-l. B.* iii. p. 39, no. 10212 (1871); *Coues, Key N. Amer. B.* p. 264 (1872); *Scl. & Salv. Nomencl. Av. Neotr.* p. 126 (1873); *Sennett, Bull. U.S. Geol. Surv.* iv. p. 58 (1878: Rio Grande); *Merrill, Proc. U.S. Nat. Mus.* i. p. 164 (1878: S. Texas).

*Ibis longirostris*, *Wagler, Isis*, 1829, p. 760; *Gray & Mitchell, Gen. B.* iii. pl. 152 (1847); *Gray, Hand-l. B.* iii. p. 39, no. 10212 (1871).

*Eudocimus longirostris*, *Wagl. Isis*, 1832, p. 1232; *Bp. Consp. Av.* ii. p. 157 (1855).

*Eudocimus albus*, *Wagler, Isis*, 1832, p. 1232; *Bp. Consp.* ii. p. 156 (1855); *Scl. & Salv. Ibis*, 1860, p. 402 (Lake Yzabal); *Brewer, Proc. Bost. Soc. N. H.* vii. p. 308 (1860: Cuba); *Hill, Proc. Philad. Acad.* 1864, p. 65, note (Jamaica); *Elliot, P. Z. S.* 1877, p. 508; *Gundl. An. Soc. Esp. H. N.* vii. p. 364 (1878: Porto Rico);



- Ridgw. Proc. U.S. Nat. Mus.* iii. p. 198 (1880); *Coues, Check-l. N. Amer. B.* p. 105 (1882); *Nutting, Pr. U.S. Nat. Mus.* v. p. 407 (1882: Costa Rica); *Belding, t. c.* p. 545 (Lower Cal.); *Nutting, Pr. U.S. Nat. Mus.* vi. p. 379 (1883: Nicaragua); *Baird, Brewer, & Ridgway, Water-B. N. Amer.* i. p. 89 (1884); *Cory, B. San Domingo*, p. 150 (1884); *Coues, Key N. Amer. B.* 2nd ed. p. 651 (1884); *Ridgw. Auk*, i. pp. 239-240 (1884); *Salvin, Ibis*, 1885, p. 376 (Cozumel); *Taczan. Orn. Pérou*, iii. p. 415 (1886: Tumbes); *Salvin, Ibis*, 1887, p. 376 (Cozumel).
- Leucibis alba*, *Reichenb. Grallatores*, Taf. 141. fig. 526 (1851).
- Falcinellus albus*, *Reichen. J. f. O.* 1877, p. 148.
- Guara alba*, *Stejn. Stand. Nat. Hist.* iv. p. 9 (1885); *A. O. U. Check-l.* p. 131 (1886); *Ferrari-Perez, Pr. U.S. Nat. Mus.* ix. p. 171 (1886: Vera Cruz, Jalapa); *Ridgw. Man. N. Amer. B.* p. 123 (1887); *Scott, Auk*, vi. p. 15 (1889: Florida); *Cory, B. W. Ind.* p. 242 (1889: Greater Antilles); *Brewst. & Chapm. Auk*, viii. p. 137 (1891: Suwanee River); *Scott, Auk*, ix. p. 9 (1892: Jamaica); *Cory, Cat. W.-Ind. B.* p. 88 (1892).

*Adult male.* Everywhere pure white, above and below, including the under wing-coverts and axillaries; wings also pure white, excepting the ends of the primaries, which, for the terminal third, are black with a steel-green and bluish gloss; head with a very evident compressed nuchal crest: "bill, bare skin of head, legs, and feet bright carmine in the breeding-season, at other times paler or orange-red; iris fine pearly blue" (*Audubon*). Total length 25 inches, culmen 6, wing 12.2, tail 4.2, tarsus 4.3, middle toe and claw 3.7.

*Audubon's* notes on the change in the colours of the soft parts should be consulted: they are too long for quotation here, but are interesting, and are reproduced by Mr. Ridgway in the 'History of North-American Birds.'

*Adult female.* Similar to the male in colour, but much smaller. Total length about 23 inches, culmen 4.8, wing 10.9, tail 3.6, tarsus 3.3, middle toe and claw 2.9.

*Young birds.* Brown above; the lower back, rump, and upper tail-coverts white; the quills dusky brown, with a slight gloss of oily green and white towards the base of the inner webs; tail-feathers brown, white at the base, especially on the centre feathers, which are glossed with oily green; the head and neck mottled and streaked, the ground-colour being ashy whitish, with longitudinal brown centres to all the feathers, these streaks being broad on the head and hind-neck, somewhat narrower and lighter on the throat and fore-neck, and paler and scarcely perceptible on the chest; remainder of under surface, from the chest downwards, white.

The colour of the face, in a series of skins, varies from yellow to blackish even in adult birds, and young birds of the year become very much paler about the head and neck during the first autumn; they then moult into a brown plumage, but this time there is a certain admixture of white plumes; it seems quite certain, however, that the bird does not attain its full plumage in the first year, as a male killed by Mr. Scott in July has plentiful remains of young plumage.



*Hab.* Southern United States, occasionally to Connecticut, Indiana, and the Great Salt Lake, ranging through Eastern Mexico to Guatemala and Costa Rica. The Greater Antilles; occurring also in Lower California, and extending to Peru and Amazonia.

|                                                  |                                                                                      |                                        |
|--------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------|
| a, b. ♀ imm. sk.                                 | Florida ( <i>Hensh. Coll.</i> ).                                                     | Salvin-Godman Coll.                    |
| c-r. ♂ ad. et juv. ;<br>♀ ad. et juv. sk.        | Tarpon Springs, Florida,<br>April, June to Sept., Nov.<br>( <i>W. E. D. Scott</i> ). | Salvin-Godman Coll.                    |
| s, t, u. ♂ ad. ; v. ♀<br>ad. sk.                 | Brownsville, Texas, March,<br>April ( <i>F. B. Armstrong</i> ).                      | Salvin-Godman Coll.                    |
| w. ♂ imm. ; x-c'.<br>♀ ad. et imm. sk.           | Corpus Christi, Texas, June<br>( <i>F. B. Armstrong</i> ).                           | Salvin-Godman Coll.                    |
| d', e'. [♀] imm. sk.                             | San Patricio, Texas, Dec. 12<br>( <i>F. B. Armstrong</i> ).                          | Salvin-Godman Coll.                    |
| f'. Ad. sk.                                      | Texas ( <i>F. B. Armstrong</i> ).                                                    | Salvin-Godman Coll.                    |
| g'. Ad. st.                                      | Mexico.                                                                              | Capt. Kellett and<br>Lieut. Wood [P.]. |
| h', i'. ♂ imm. ; k',<br>l'. ♀ ad. et imm.<br>sk. | Presidio, Mexico, Jan. ( <i>A. Forrer</i> ).                                         | Salvin-Godman Coll.                    |
| m'. ♂ imm. ; n', o'.<br>♀ ad. sk.                | Tampico, Feb. ( <i>W. B. Richardson</i> ).                                           | Salvin-Godman Coll.                    |
| p'. Ad. st.                                      | Tamesi, March ( <i>W. B. Richardson</i> ).                                           | Salvin-Godman Coll.                    |
| q', r', s'. Imm. sk.                             | La Antigua, Vera Cruz, Sept.<br>( <i>M. Trujillo</i> ).                              | Salvin-Godman Coll.                    |
| t'-z'. Ad. ; a'', b''.<br>Imm. sk.               | Cozumel Isl. ( <i>G. F. Gaumer</i> ).                                                | Salvin-Godman Coll.                    |
| e'', d''. ♂ imm. et<br>♀ ad. sk.                 | Grassy Key, Turneff Land,<br>British Honduras, May 20<br>( <i>O. S.</i> ).           | Salvin-Godman Coll.                    |
| e''. Ad. sk.                                     | Chiapam, Guatemala ( <i>O. S.</i> ).                                                 | Salvin-Godman Coll.                    |
| f''. Imm. sk.                                    | Nicoya, Costa Rica ( <i>E. Arcé</i> ).                                               | Salvin-Godman Coll.                    |
| g''. Imm. sk.                                    | Momotombo, Nicaragua ( <i>W. B. Richardson</i> ).                                    | Salvin-Godman Coll.                    |
| h'', i''. Skeletons.                             | Mexico.                                                                              | Purchased.                             |

## 2. *Eudocimus ruber*.

The Red Curlew, *Catesby, N. H. Carol.* i. pl. 84 (1731).

The Lesser Ibis, *Edwards, Nat. Hist. Gleanings*, iii. pl. 356 (1764).

Le Courly rouge du Brésil, *Briss. Orn.* v. p. 344, pl. 29. figs. 1, 2 (1760); *D'Aubent. Pl. Enl.* viii. pls. 80, 81.

*Tantalus ruber*, *Linn. Syst. Nat.* i. p. 241 (1766); *Gm. Syst. Nat.* i. p. 651 (1788); *Wils. Amer. Orn.* viii. p. 41, pl. 66. fig. 2 (1814).

*Tantalus fuscus*, *Linn. Syst. Nat.* i. p. 242 (1766).

*Tantalus minutus*, *Linn. Syst. Nat.* i. p. 241 (1766).

*Scolopax rubra*, *Scop. Ann.* i. p. 93 (1769).

Le Courlis rouge, *Buff. Hist. Nat. Ois.* viii. p. 35 (1781).

Scarlet Ibis, *Lath. Gen. Syn.* iii. pt. 1, p. 106 (1785).

*Ibis rubra*, *Vieill. N. Dict. d'Hist. Nat.* xvi. p. 22 (1817); *Jard. ed.*

*Wilson's Amer. Orn.* iii. p. 63, pl. 66. fig. 2 (1832); *Audub. Orn.*

*Biogr.* v. p. 62 (1839); *D'Orbign. in Ramon de la Sagra, Hist.*

*Nat. Cuba*, p. 228 (1840); *Audub. B. Amer.* 8vo, vi. p. 53, pl. 359

(1843); *Gray, List Grall. Brit. Mus.* p. 91 (1844: British Guiana)

- id. Gen. B.* iii. p. 565 (1847); *Denny, P. Z. S.* 1847, p. 39 (Jamaica); *Gosse, B. Jamaica*, p. 348 (1847); *Burm. Th. Bras.* iii. p. 425 (1856: N. Brazil; Amazon); *Cab. in Schomb. Reis. Brit. Guian.* iii. p. 756 (1858); *Cassin in Baird, B. N. Amer.* p. 683 (1858: S. America); *Schl. Mus. Pays-Bas, Ibis*, p. 6 (1863: Surinam, Cayenne); *March, Proc. Philad. Acad.* 1864, p. 65 (Jamaica); *E. C. Taylor, Ibis*, 1864, p. 95 (Rio Orinoco); *Coues, t. c.* p. 159 (Rio Grande); *Dresser, Ibis*, 1866, p. 32 (Matamoras); *Gray, Hand-l. B.* iii. p. 38, no. 10211 (1871); *Pelz. Orn. Bras.* pp. 306, 456 (1871: Paranagua, Jan.; Rio Boraxudo; Cajutuba, Dec.); *Coues, Key N. Amer. B.* p. 264 (1872); *Scl. & Salv. Nomencl. Av. Neotr.* p. 126 (1873); *Pelz. Ibis*, 1873, p. 121.
- Ibis leucopygus*, *Spir, Av. Bras.* p. 70, tab. 88 (1825).
- Eudocimus ruber*, *Wagler, Isis*, 1832, p. 1232; *Bp. Consp.* ii. p. 157 (1855); *Gundl. J. f. O.* 1862, p. 13 (Cuba); *Salvin, Ibis*, 1866, p. 206; *Ridgw. Proc. U.S. Nat. Mus.* iii. p. 198 (1880); *A. & E. Newt. Handb. Jamaica*, p. 112 (1881); *Coues, Check-l. N. Amer. B.* p. 106 (1882); *Baird, Brewer, & Ridgw. Water-B. N. Amer.* i. p. 87 (1884); *Coues, Key N. Amer. B.* 2nd ed. p. 651 (1884); *Ridgw. Auk*, i. p. 239 (1884); *Salvin, Ibis*, 1886, p. 171 (British Guiana); *W. L. Sclater, Ibis*, 1887, p. 317 (British Guiana).
- Guara rubra*, *Reichenb. Av. Syst. Nat.* p. xiv (1852); *Stejn. Stand. Nat. Hist.* iv. p. 9 (1885); *A. O. U. Check-l. N. Amer. B.* p. 123 (1867); *Ridgw. Man. N. Amer. B.* p. 123 (1887); *Cory, B. W. Ind.* p. 242 (1889); *Scott, Auk*, vi. p. 15 (1889: Florida); *id. Auk*, ix. p. 9 (1892: Jamaica); *Cory, Cat. B. W. Ind.* p. 88 (1892: Greater Antilles).
- Falcinellus ruber*, *Reichen. J. f. O.* 1877, p. 147.

**Adult.** General colour above and below brilliant scarlet, the shafts of the quills white; the four outer primaries purplish black at the ends; base of forehead, lores, region round the eye, fore part of cheeks, chin, and upper throat bare, yellow in skin, "fleshy red in life; bill blackish brown, fleshy red at the base; feet fleshy red" (*H. Burmeister*). Total length 19 inches, culmen 4.9, wing 9.7, tail 3.2, tarsus 3.1.

**Young.** Brown above, with lighter brown edges to the feathers; quills dark brown, with a gloss of oily-green; lower back, rump, and upper tail-coverts white, the latter washed with dusky edgings; basal half of tail dull white, mottled with brown, the terminal half of the tail light brown, with bands of darker brown; head and neck all round light brown, with darker brown streaks; sides of face more isabelline brown; remainder of under surface of body dull white.

**Hab.** British Guiana; Rio Negro; occurring also in the Greater Antilles and occasionally in Texas and Florida.

|             |                                |                          |
|-------------|--------------------------------|--------------------------|
| a. Ad. st.  | South America.                 | Purchased.               |
| b. Juv. st. | South America.                 | Purchased.               |
| c. Juv. st. | British Guiana.                | Sir R. Schomburgk [C.].  |
| d. Juv. sk. | Berbice.                       | J. J. Quelch, Esq. [P.]. |
| e. Ad. sk.  | Brazil ( <i>J. Natterer</i> ). | Salvin-Godman Coll.      |

## Family II. PLATALEIDÆ.

*Key to the Genera.*

- a.** Head partially bare; auricular orifice covered with plumes.
- a'.** Nostrils elongated ovals and situated in a shallow depression, which loses itself about the commencement of the narrowed part of the bill, and is continued in the narrow sub-marginal line, which runs to the tip of the bill; a full crest in breeding-plumage; no tuft of ornamental plumes on the breast. 1. PLATALEA, p. 43.
- b'.** Nostrils elongate and situated in a deep depression, very marked, with lateral ridges; no crest; ornamental breeding-plumes on fore-neck; inner secondaries with decomposed plumes as in an Ibis . . . 2. PLATIBIS, p. 51.
- b.** Head entirely bare, with auricular orifice exposed; no ornamental plumes on head or neck, but some rosy feathers on the fore-neck; plumage tinged throughout with rosy . . . . . 3. AJAJA, p. 52.

## 1. PLATALEA.

|                                                                             | Type.                       |
|-----------------------------------------------------------------------------|-----------------------------|
| Platea, <i>Briss. Orn.</i> v. p. 351 (1760) . . . . .                       | P. leucero <sup>d</sup> ia. |
| Platalea, <i>Linn. Syst. Nat.</i> i. p. 231 (1766) . . . . .                | P. leucero <sup>d</sup> ia. |
| Spathero <sup>d</sup> ia, <i>Reichenb. Av. Syst. Nat.</i> p. xvi (1852) . . | P. regia.                   |
| Leucero <sup>d</sup> ia, <i>Reichenb. Av. Syst. Nat.</i> p. xvi (1852) . .  | P. alba.                    |

[Cf. Ogilvie-Grant, *Ibis*, 1889, pp. 32-58.]

*Range.* Nearly cosmopolitan.

*Key to the Species.*

- a.** Throat bare, truncated on its lower margin.
- a'.** Plumes of crown extending in front of the eye, and reaching nearly to the base of the culmen; bare throat yellow, as well as the bare space round the eye; bill black, with yellow mottlings or corrugations (*adult*), or yellowish (*young*) . . . . . leucero<sup>d</sup>ia, p. 44.
- b'.** Plumes of crown not extending so far as the line of the eye, the whole forehead and region of the eye bare.
- a''.** Bare skin of face and throat always black; feet black; bill black . . . . . regia, p. 47.
- b''.** Bare skin of face and throat red; feet and bill red, or yellow in skin . . . . . alba, p. 49.
- b.** Throat bare, but with a triangular projection of the feathers of the lower throat, extending in a point towards the chin . . . . . minor, p. 50.

1. *Platalea leucorodia*.

- La Spatule*, *Briss. Orn.* v. p. 352 (1760); *D'Aubent. Pl. Enl.* viii. pl. 405 (fig. inacc.); *Buff. Hist. Nat. Ois.* vii. p. 448, pl. xxiv. (1780).
- Platalea leucorodia*, *Linn. Syst. Nat.* i. p. 231 (1766); *Gm. Syst. Nat.* i. p. 613 (1788); *Pall. Zoogr. Rosso-Asiat.* ii. p. 162 (1811: Selenga R.; Angunj); *Temm. Man. d'Orn.* ii. p. 595 (1820); *Roux, Orn. Prov.* pl. 310 (1825); *Werner, Atlas, Gralles*, pl. 3 (1827); *Less. Traité d'Orn.* p. 579 (1831); *Ménétr. Cat. Rais. Cauc.* p. 50 (1832: Terek R., Lenkoran); *Gould, B. Eur.* iv. pl. 286 (1837); *Bp. Comp. List B. Eur. & N. Amer.* p. 48 (1838); *Crespon, Orn. Gard*, p. 400 (1840); *Nordm. in Démid. Voy. Russ. Mérid.* iii. p. 265 (1840: Black Sea); *Selys-Longch. Faun. Belg.* p. 134 (1842); *Mühle, Beitr. Orn. Griechenl.* p. 118 (1844); *Schl. Rev. Crit.* p. ci (1844); *Gray, List Grall. Brit. Mus.* p. 86 (1844); *id. Cat. Mamm. &c. Nepal pres. Hodgs.* p. 135 (1846); *Hewits. Eggs Brit. B.* ii. p. 283, pl. lxxvii. (1846); *Gray, Gen. B.* iii. p. 599 (1847); *Blyth, Cat. B. Mus. As. Soc.* p. 276 (1849: Calcutta); *Thomps. B. Irel.* ii. p. 178 (1850); *Macgill. Brit. B.* iv. p. 503 (1852); *Kjærbo. Danm. Fugle*, tab. xxxiii. a. fig. 1 (1852); *Schl. Vog. Nederl.* pl. 198 (1854); *Bp. Conspect. Av.* ii. p. 147 (1855); *Jaub. et Barth.-Lapomm. Rich. Orn.* p. 370 (1859); *Heugl. Ibis*, 1859, p. 346 (Red Sea); *Linderm. Vög. Griechenl.* p. 154 (1860); *Swinh. Ibis*, 1860, p. 65 (Amoy); *Powys, t. c.* p. 348 (Ionian Islands); *Schl. Dier. Nederl. Vogels*, pl. xx. fig. 1 (1861); *Irby, Ibis*, 1861, p. 244 (Oudh and Kumaon); *Swinh. t. c.* p. 344 (N. China); *Gray, List Brit. B.* p. 151 (1863); *Wright, Ibis*, 1864, p. 144 (Malta); *Radde, Reis. Sibir., Vög.* p. 345 (1863: S. Dauria; Amur); *Jerd. B. Ind.* iii. p. 763 (1864); *Schl. Mus. Pays-Bas, Ciconiæ*, p. 19 (1864); *More, Ibis*, 1865, p. 434 (breeding-range in Gt. Brit.); *Godm. Ibis*, 1866, p. 101 (Azores); *Degl. et Gerbe, Orn. Eur.* ii. p. 321 (1867); *Loche, Expl. Sci. Algér., Ois.* ii. p. 149 (1867); *E. C. Taylor, Ibis*, 1867, p. 70; *Blyth, t. c.* p. 173; *Tristr. Ibis*, 1868, p. 326 (Palestine); *Smith, t. c.* p. 454 (Portugal); *Gould, B. Gt. Brit.* iv. pl. 32 (1868); *Doderl. Avif. Sicil.* p. 219 (1869); *Saunders, Ibis*, 1869, p. 183 (S. Spain); *Droste, Vogelt. Borkum*, p. 257 (1869); *Stevens. B. Norf.* ii. p. 184 (1870); *Elwes & Buckley, Ibis*, 1870, p. 334; *Fritsch, Vög. Eur. Taf.* 42. fig. 6 (1870); *Sund. Sv. Fogl.* pl. 77. fig. 2 (1870); *Salvad. Faun. Ital., Ucc.* p. 247 (1871); *Gray, Hand-l. B.* iii. p. 37, no. 10199 (1871); *R. Gray, B. West Scott.* p. 286 (1871); *Saunders, Ibis*, 1871, p. 394 (S. Spain); *Harting, Handb. Brit. B.* p. 54 (1872); *Holdsw. P. Z. S.* 1872, p. 478; *Shelley, B. Egypt*, p. 264 (1872); *Severtz. Turkest. Jevotn.* p. 68 (1873: breeds); *Brooke, Ibis*, 1873, p. 341 (Sardinia); *Hayes Lloyd, t. c.* p. 419 (Kathiawar); *Heugl. Orn. N.O.-Afr.* ii. pt. 1, p. 1122 (1873: Egypt; Central and Southern Nubia; Somali Coast; Jeddah and Dahlak Archip., breeding); *Hume, Nests & Eggs Ind. B.* p. 628 (1873); *id. Str. F.* i. p. 256 (1873: Punjab rivers); *Adam, t. c.* p. 399 (Sambhur, rainy season); *Saiby, B. Shetl.* p. 188 (1874); *Irby, Orn. Straits Gibr.* p. 192 (1875); *Legge, Ibis*, 1875, p. 404 (S. Ceylon); *Fallon, Ois. Belg.* p. 164 (1875); *Dresser, Ibis*, 1876, p. 326 (Turkestan); *Blanf. East. Persia*, ii. p. 298 (1876: Bampur, Baluchistan; Caspian); *Butler, Str. F.* iv. p. 24 (1876: Mount Aboo and Guzerat); *Ball, t. c.* p. 237 (Mahanadi); *Fairb. t. c.* p. 264 (Deccan); *Prjev. in Rowley's*

- Orn. Misc.* iii. p. 51 (1877: Lake Hanka; Ussuri); *Scl. & W. A. Forbes, Ibis*, 1877, pp. 412-416 (Holland, breeding); *Hume, Str. F.* vii. p. 67 (1878: Jodhpur); *Davidson & Wenden, t. c.* p. 91 (Deccan); *Ball, t. c.* p. 231 (Orissa; Raipur); *Hume, t. c.* p. 491 (Calcutta); *Finsch, Verh. z.-b. ges. Wien*, xxix. p. 249 (1879: Sassyk-Ala-Kul); *Hume, Str. F.* viii. p. 114 (1879); *Doig, t. c.* p. 372 (E. Narra); *Butler, Cat. B. Sind etc.* p. 71 (1879: Sind; Cutch; Kathiawar; Guzerat; resident in some districts, migratory in others); *id. Cat. B. S. Bomb. Pres.* p. 84 (1880); *Legge, B. Ceylon*, p. 1096 (1880: breeds); *Vidal, Str. F.* ix. p. 91 (1880: S. Konkan); *Butler, t. c.* p. 435 (Deccan); *Reid, Str. F.* x. p. 77 (1881: Lucknow, winter); *Scl. & Hartl. P. Z. S.* 1881, p. 173 (Socotra); *Gigl. Ibis*, 1881, p. 212 (Italy); *Simson, Ibis*, 1882, p. 93 (Dacca distr.); *Seebohm, t. c.* p. 226 (Astrakhan), p. 370 (Japan), p. 382 (Archangel, Dec.); *Davidson, Str. F.* x. p. 324 (1882: Khandeish, winter); *Seebohm, Ibis*, 1883, p. 32 (Caucasus, migrant); *Irby, t. c.* p. 188 (Santander); *Parker, t. c.* p. 194 (Ceylon, nesting Feb., March); *B. O. U. List Brit. B.* p. 113 (1883); *Booth, Rough Notes*, ii. pl. 16 (1831-87); *Saunders, ed. Yarrell's Brit. B.* iv. p. 237 (1884); *Blakist. Amended List B. Japan*, pp. 10. 40 (1884); *Tristr. Faun. & Flor. Palest.* p. 112 (1884: occasional); *Eagle Clarke, Ibis*, 1884, p. 147 (Obedska Bara: breeding); *Bogd. Consp. Av. Imp. Ross.* p. 119 (1884); *Raddle, Orn. Cauc.* pp. 42, 406 (1884: breeds; rare near Tiflis in winter); *Murray, Vertebr. Faun. Sind*, p. 277 (1884); *Seebohm, Hist. Brit. B.* iii. p. 514 (1884); *Swinh. & Barnes, Ibis*, 1885, p. 136 (Mhow distr.); *Yerbury, Ibis*, 1886, p. 22 (Aden); *Gigl. Arif. Ital.* p. 288 (1886); *Salvad. Elenco Ucc. Ital.* p. 249 (1886); *Tait, Ibis*, 1887, p. 374 (Portugal, winter); *Reid, Ibis*, 1888, p. 78 (Teneriffe); *Chapm. t. c.* p. 449; *Koenig, J. f. O.* 1888, p. 272 (Tunis); *Saunders, Man. Brit. B.* p. 381 (1889); *Sharpe, Trans. Linn. Soc. (2) Zool.* v. pt. 3, p. 90 (1889: Kalla-i-maur, Badghis); *Ogilvie-Grant, Ibis*, 1889, pp. 35-47; *Gigl. Avif. Ital. 1st Resoc.* p. 450 (1889), *2nd Resoc.* p. 658 (1890), *3rd Resoc.* p. 515 (1891); *Seebohm, B. Japan. Emp.* p. 229 (1890); *Lilford, Col. Fig. Brit. B.* part xii. (1890); *Oates, ed. Hume's Nests & Eggs Ind. B.* iii. p. 217 (1890); *Buckley & Harvie-Brown, Vertebr. Faun. Orkneys*, p. 163 (1891); *Madarász, Erläut. Ausst. Ungar. Vög.* p. 107 (1891); *Frivaldsky, Av. Hung.* p. 115 (1891); *Reiser, Vogels. Mus. Sarajero*, p. 108 (1891); *Sharpe, Ibis*, 1891, p. 112 (Fao); *Macph. Vertebr. Faun. Lakeland*, p. 231 (1892); *Barnes, Ibis*, 1893, pp. 174, 181 (Aden); *Meade-Waldo, t. c.* p. 199 (Fuerteventura).
- Platea leucopodius*, *S. G. Gmelin, Reis. Russl.* i. p. 163 (1770).
- White Spoonbill, *Lath. Gen. Syn.* iii. pt. 1, p. 13 (1785); *Yarrell, Brit. B.* p. 449 (1843).
- Platea leucorodia*, *Leach, Syst. Cat. Mamm. &c. Brit. Mus.* p. 33 (1816: Devonshire); *Dresser, B. Eur.* vi. p. 319, pl. 407 (1873).
- Platalæ nivea*, *Cur. Règne An.* i. p. 482 (1817: juv.); *Brehm, Vög. Deutschl.* p. 600 (1831).
- Platalea leucorodius*, *Naum. Vög. Deutschl.* ix. Taf. 230 (1834); *Keys & Blas. Wirb. Eur.* pp. lxxxix, 221 (1840); *Borggr. Vogelf. Norddeutschl.* p. 125 (1869); *Heine & Reichen. Nomencl. Mus. Hein.* p. 313 (1890); *Olphe-Gall. Contr. Faun. Orn. Eur. Occid.* fasc. xv. p. 46 (1891).
- Platalea pyrrhops*, *Hodgs. Icon. ined. in Brit. Mus., Gall.* pl. 68, no. 144; *id. in Gray's Zool. Misc.* p. 86 (1844).
- Platalea major*, *Temm. & Schl. Faun. Jap.* p. 119, pl. lxxv. (1850);

*Bp. Consp. Av.* ii. p. 147 (1855); *Schl. Mus. Pays-Bas*, Ciconiæ, p. 21 (1864); *Gray, Hand-l. B.* iii. p. 37, no. 10200 (1871); *Swinh. P. Z. S.* 1871, p. 411; *Tacz. Bull. Soc. Zool. France*, i. p. 258 (1876); *David & Oust. Ois. Chine*, p. 451 (1877); *Prjev. in Rowley's Orn. Misc.* iii. p. 51 (1877: Dalai-nor; Hoangho Valley); *Blakist. & Pryer, Ibis*, 1878, p. 223 (Japan); *Seebohm, Ibis*, 1879, p. 27 (Japan); *Styan, Ibis*, 1891, pp. 327, 494 (Kiukiang; Shanghai).

*Platalea leucorodia*, *Reichen. J. f. O.* 1877, p. 159; *Fischer & Reichen. J. f. O.* 1878, p. 248 (Osi-Tana); *Fischer, J. f. O.* 1885, p. 117 (Formosa Bay, Zanzibar); *Hartwig, J. f. O.* 1878, p. 457 (Madeira); *Reichen. Syst. Verz. Vög. Deutschl.* p. 42 (1889); *Brusina, Motr. etc. (Orn. Croat.)* p. 74 (1890); *Reichen. Vög. Deutsch-Ost-Afr.* p. 56 (1889: resident; coast; Ugalla River; Masai Steppes).

*Platalea minor* (*err. pro P. major*), *Bogd. Consp. Av. Imp. Ross.* p. 120 (1884).

Spoonbill, *Buckley & Harvie-Brown, Vertebr. Faun. Outer Hebrides*, p. 247 (1888: South Uist).

*Adult male in breeding-plumage.* Entirely white above and below; quills and tail-feathers also white; a large nuchal crest of pointed and drooping plumes; on the fore-neck a shade of tawny or cinnamon-buff: "bill deep slate-colour, irregularly barred with black, and having a yellow patch on the underpart; feet black; iris crimson" (*G. E. Shelley*). Total length 38 inches, culmen 8.1, wing 14.9, tail 4.7, tarsus 5.7.

*Adult in winter plumage.* Similar to the summer plumage, but wanting the crest of drooping plumes: "bare face before the eye flesh-colour or greenish yellow; eyelid yellow" (*von Heuglin*).

*Nestling.* Covered with white down; the throat and loreal region bare, as in the fully adult birds; bill yellow.

*Young.* Entirely white above and below, but without any nuchal crest; primary-coverts and quills black-shafted, and the outer primaries blackish along their outer webs and at their tips; bill yellow. A female killed by Major Bingham near Delhi, in March, had the bill "pale inky black, mottled with yellow at the tip; bare skin of chin yellow; feet and claws black; iris red."

*Hab.* Central and Southern Europe, east to Central Asia and China; the Indian Peninsula; Africa, on the East coast as far south as Zanzibar. Everywhere local. Mr. Ogilvie Grant, in his excellent paper on the genus *Platalea*, has fully discussed the question of the relations of *P. major* and *P. leucorodia*, which he regards as Eastern and Western races of the Common Spoonbill. From the measurements which he has given, and which I have mostly adopted in the list of specimens given below, there seems to me to be such an absolute intergradation between the two, that I cannot separate them specifically.

|                                       |                     |                          |
|---------------------------------------|---------------------|--------------------------|
| a. Ad æstiv. st.<br>[c. 7.5; t. 6.5]. | England.            | Mr. J. Baker.            |
| b. Ad. sk. [c. 7.0;<br>t. 5.2].       | Devonshire.         | Montagu Coll.            |
| c. Bill [c. 7.0].                     | Romney Marsh, Sept. | Dr. Gordon Hogg<br>[P.]. |

|                                                  |                                                               |                             |
|--------------------------------------------------|---------------------------------------------------------------|-----------------------------|
| d. ♀ imm. sk.                                    | Holland, Aug. 24.                                             | Salvin-Godman Coll.         |
| e. ♀ juv. sk.                                    | Holland.                                                      | Seebohm Coll.               |
| f, g. Pull. sk.                                  | Holland.                                                      | Gould Coll.                 |
| h, i, k. Ad. æstiv. sk. [c. 6·9-81; t. 5·1-5·7]. | South Spain.                                                  | Lord Lilford [P.].          |
| l. Ad. sk.                                       | Egypt ( <i>G. E. S.</i> ).                                    | Shelley Coll.               |
| m. Ad. sk.                                       | Socotra.                                                      | Prof. I. B. Balfour [C.].   |
| n. ♀ juv. sk. [t. 5·4].                          | Mesopotamia ( <i>Commander Jones</i> ).                       | India Museum.               |
| o. Juv. sk.                                      | Fao, Persian Gulf.                                            | W. D. Cumming, Esq. [P.].   |
| p. ♂ ad. sk. [c. 9·0; t. 6·1].                   | Kila Maur, N. Afghanistan ( <i>Dr. Aitchison</i> ).           | Afghan Boundary Commission. |
| q, r. ♂ ad. sk. [c. 8·4-9·0; t. 6·1].            | River Indus, above Sukhur, Sind, Nov. 16 ( <i>A. O. H.</i> ). | Hume Coll.                  |
| s. ♂ imm. sk. [c. 8·2; t. 6·1].                  | R. Chenab, Dec. 9 ( <i>A. O. H.</i> ).                        | Hume Coll.                  |
| t. ♀ ad. sk. [c. 7·0; t. 5·3].                   | Sambhur, July 27 ( <i>R. M. Adam</i> ).                       | Hume Coll.                  |
| u, v. ♂ ♀ ad. sk. [c. 8·5-7·2; t. 5·8-5·1].      | Delhi, March ( <i>C. T. Bingham</i> ).                        | Hume Coll.                  |
| w. ♂ ad. sk. [c. 8·5; t. 6·1].                   | Near Ajmere, Jan. 8 ( <i>A. O. H.</i> ).                      | Hume Coll.                  |
| x. ♂ ad. sk. [c. 8·6; t. 6·0].                   | Jodhpur, Sept. 5 ( <i>G. King</i> ).                          | Hume Coll.                  |
| y. Juv. sk.                                      | Jhansie, April.                                               | Hume Coll.                  |
| z. Juv. sk.                                      | Etawah.                                                       | Hume Coll.                  |
| a', b'. Ad. et juv. sk. [c. 8·3; t. 5·7].        | Oudh.                                                         | Hume Coll.                  |
| c'. Juv. sk.                                     | Nepal.                                                        | Hodgson Coll.               |
| d'. Ad. sk. [c. 8·8; t. 5·8].                    | Saugor.                                                       | Hume Coll.                  |
| e'. ♀ ad. sk. [c. 7·5; t. 5·5].                  | Seoni.                                                        | Hume Coll.                  |
| f'. Ad. sk. [c. 7·8; t. 5·5].                    | Putlam, W. Ceylon, Jan.                                       | Walter Deed, Esq. [P.].     |
| g'. ♂ imm. sk. [c. 7·5; t. 5·4].                 | Yokohama, Japan ( <i>Blakiston</i> ).                         | Seebohm Coll.               |
| h'. ♂ ad. sk. [c. 8·4; t. 5·8].                  | Hakodadi, April ( <i>Blakiston</i> ).                         | Seebohm Coll.               |
| i'. ♀ juv. sk. [c. 7·3; t. 5·2].                 | Tamsui, Formosa, March ( <i>R. Swinhoe</i> ).                 | Seebohm Coll.               |
| k'. Skeleton, mtd.                               |                                                               | Purchased.                  |
| l'. Skeleton.                                    | India.                                                        | Purchased.                  |
| m'. Skeleton.                                    |                                                               | Purchased.                  |
| n', o'. Two skulls.                              |                                                               | Purchased.                  |
| p'. Sternum of female.                           |                                                               | A. D. Bartlett, Esq. [P.].  |
| q'. Sternum.                                     |                                                               | John Ray, Esq. [P.].        |

2. *Platalea regia*.

*Platalea regia*, Gould, *P. Z. S.* 1837, p. 106; *id.* *Syn. B. Austr.* part iv., App. p. 7 (1838); *id.* *B. Austr.* vi. pl. 50 (1842); Gray,



- List Grall. Brit. Mus.* p. 87 (1844); *id. Gen. B.* iii. p. 559 (1847); *Reichenb. Vög. Neuhol.* p. 26 (1850); *Gould, Handb. B. Austr.* ii. p. 287 (1865); *Finsch, Neu-Guinea*, p. 182 (1865); *Ramsay, Proc. Linn. Soc. N. S. W.* i. p. 190 (1877); *Buller, Trans. New Zeal. Inst.* ix. p. 327 (1877); *Ramsay, Proc. Linn. Soc. N. S. W.* (2) i. p. 1100 (1887: N.W. Australia), (2) ii. p. 172 (1888: Derby).
- Spatherodia melanorhynchos*, *Reichenb. Av. Syst., Gall. Taf.* 145. figs. 1018-19 (1852).
- Platalea melanorhyncha*, *Bp. Consp. Av.* ii. p. 148 (1855); *Schl. Mus. Pays-Bas., Ciconiæ*, p. 23 (1864: Moreton Bay); *Gray, Hand-l. B.* iii. p. 37, no. 10204 (1871); *Reichen. J. f. O.* 1877, p. 157; *Casteln. & Ramsay, Proc. Linn. Soc. N. S. W.* i. p. 385 (1877: Norman River, Gulf of Carpentaria); *Ramsay, op. cit.* ii. p. 198 (1878); *id. Tab. List Austr. B.* p. 20 (1888: nearly the whole of Australia); *Buller, B. New Zeal.* 2nd ed. ii. p. 144 (1888); *Ogilvie-Grant, Ibis*, 1889, p. 48, pl. 1. figs. 1 a, 4, 5; *Cox & Hamilton, Proc. Linn. Soc. N. S. W.* (2) iv. p. 420 (1890: Mudgee distr.).
- Platalea latirostrum*, *Ellman, Zool.* 1861, p. 7469.
- Platalea intermedia*, *Ogilvie-Grant, Ibis*, 1889, p. 52, pl. i. figs. 2, 2 a (Port Moresby); *Everett, Journ. Straits Branch As. Soc.* 1889, p. 191 (Borneo); *Salvad. Agg. Orn. Papuasias etc.* iii. p. 209 (1891).

*Adult.* Entire plumage white, with a very full crest on the crown and occiput; a tinge of sandy buff on the fore-neck; forehead to behind the line of the eye, fore part of cheeks, and upper throat black (in skin), with a yellow spot just above the eye, and sometimes a small patch of yellow on the throat: "bill, face, legs, and feet black; on the crown of the head and over each eye a triangular mark of orange; iris red" (*J. Gould*). Total length about 34 inches, culmen 8, wing 15, tail 4.6, tarsus 5.5.

*Young.* White like the adults, but with a much shorter bill and no crest, and having the primary-coverts and quills black-shafted, the primaries with a good deal of brown at the ends, the outer ones also brown along the outer webs.

*Hab.* The greater part of Australia, and probably the Moluccas. I have come to the conclusion that *Platalea intermedia* of Ogilvie Grant must be referred to this species. Prof. W. Blasius has recorded a Spoonbill from Celebes (*J. f. O.* 1883, p. 126), which he calls *P. luzoniensis*. Mr. Büttikofer also supplied Mr. Grant with details of two examples from Borneo in the Leyden Museum, and the latter writer believed them to be the same as his *P. intermedia* from New Guinea. I myself do not doubt that birds from Borneo, Celebes, and New Guinea are all referable to *P. regia*, but a further comparison of specimens is desirable.

|                                 |                                        |                         |
|---------------------------------|----------------------------------------|-------------------------|
| <i>a, b.</i> Ad. st.            | New South Wales.                       | Australian Museum [P.]. |
| <i>c.</i> Juv. sk.              | New South Wales.                       | Hume Coll.              |
| <i>d, e, f.</i> Ad. et juv. sk. | Queensland ( <i>J. T. Cockerell</i> ). | Salvin-Godman Coll.     |
| <i>g, h.</i> Ad. sk.            | Moreton Bay.                           | Gould Coll.             |
| <i>i.</i> Ad. sk.               | Port Essington.                        | Capt. Chambers [P.].    |



- k. Ad. sk.** N.W. Australia (*T. H. Bowyer* Capt. Bowyer Bower  
*Bower*). [P.]
- l. Head & feet.** S.E. New Guinea (*H. Romilly*). Lord Walsingham  
[P.] (Type of  
*P. intermedia*, Grant.)

3. *Platalea alba* \*.

- La Spatule blanche** de l'isle de Luçon, *Sonn. Voy. N. Guin.* p. 89, pl. 51 (1776).
- La Spatule hupée** de l'isle de Luçon, *Sonn. Voy. N. Guin.* p. 90, pl. 52 (1776).
- Platalea alba*, *Scop. Del. Flor. et Faun. Insubr.* ii. p. 92 (1786: *ex Sonn.* pl. 51); *Ogilvie Grant, Ibis*, 1889, p. 47.
- Platalea cristata*, *Scop. Del. Flor. et Faun. Insubr.* ii. p. 92 (1786: *ex Sonn.* pl. 52); *Reichen. J. f. O.* 1877, p. 158; *Salvad. Ann. Mus. Civic. Genov.* (2) i. p. 232 (1884: Shoa), vi. p. 317 (1888).
- Platalea leucorodia*, varr.  $\beta$ ,  $\gamma$ , *Gm. S. N. i.* p. 614 (1788).
- Platalea tenuirostris*, *Temm. Mun. d'Orn.* i. p. ciii (1820); *Gray, List Grallæ Brit. Mus.* p. 87 (1844); *Rüpp. Syst. Uebers.* p. 121 (1845: Senaar); *Gray, Gen. B.* iii. p. 559 (1847); *Bp. Consp.* ii. p. 148 (1855); *A. E. Brehm, J. f. O.* 1856, p. 471; *Hartl. Orn. W. Afr.* p. 226 (1857: Bissao; Gaboon); *A. E. Brehm, J. f. O.* 1858, p. 326; *Hartl. J. f. O.* 1861, p. 270; *Gurney, Ibis*, 1861, p. 134 (Natal); *Monteiro, P. Z. S.* 1865, p. 89 (Benguela); *Antin. Cat. descr. Ucc.* p. 106 (1864: White Nile); *Layard, B. S. Afr.* p. 313 (1867); *Grandid. Rev. et Mag. de Zool.* 1868, p. 1; *Finsch & Hartl. Vög. Ostaf.* p. 718 (1870); *Gray, Hand-l. B.* iii. p. 37, no. 10201 (1871); *Gurney in Anders. B. Dam. Ld.* p. 295 (1872: Damara; Gt. Namaqua-ld.); *Heugl. Orn. N.O.-Afr.* ii. pt. i. p. 1126, pl. 50. fig. 1 (1873: Tropical Nile districts; Khartoum; E. Kordofan; egg); *Ussher, Ibis*, 1874, p. 73 (Gold Coast); *Ayres, t. c.* p. 105 (Transvaal); *Hartl. Vög. Madag.* p. 314 (1877); *Milne-Edw. & Grandid. H. N. Madag., Ois.* p. 524, pls. 215-217 (1879-82); *Bocage, Orn. Angola*, p. 456 (1881: Mossamedes; Humbe); *Holub & Pelz. Beitr. Orn. Südaf.* p. 290 (1882); *Butler, Feilden, & Reid, Zool.* 1882, p. 345 (Natal); *Sharpe, ed. Layard's B. S. Afr.* p. 742 (1884); *Ayres, Ibis*, 1885, p. 350 (Mooi River); *Matschie, J. f. O.* 1887, p. 146 (Qua Mpara, July); *Schalow, t. c.* p. 277; *Shelley, P. Z. S.* 1888, p. 48 (Lado); *Sibree, Ibis*, 1892, p. 117 (Madagascar).
- Platalea nivea*, *Burch. Trav. S. Afr.* i. p. 501 (1822: Klaaswater).
- Platalea chlororhynchos*, *Drap. Dict. Class.* xv. p. 531, pl. 72. fig. 2 (1829); *Schl. Mus. Pays-Bas, Ciconii*, p. 22 (1864); *id. & Poll. Faune Madag.* p. 128 (1868).
- Platalea telfairii*, *Vigors, P. Z. S.* 1831, p. 41, 1832, p. 111; *Gray, Gen. B.* iii. p. 559 (1847); *Hartl. J. f. O.* 1860, p. 168; *id. Faune Madag.* p. 76 (1861); *Schl. P. Z. S.* 1866, p. 425.

\* Mr. Ogilvie Grant argues for the adoption of Scopoli's name of *P. alba*, founded on Sonnerat's plate. Although the bird is said to have come from Luzon, it is well-known that many of Sonnerat's species were obtained in Africa, and set down in error as being from the Philippines. That this has been the case with the present species hardly admits of a doubt, as both species of Spoonbill from Luzon are said to have the legs yellow or red, which can only apply to the African bird. Dr. Oustalet reports that he has seen a specimen of a Spoonbill killed in Luzon by M. Baer, but I agree with Mr. Grant that this was probably *P. minor*.

- Platalea nudifrons*, *Less. Traité*, p. 579 (1831 : *ex Cuv. Mus. Paris*) ;  
*Pucher. Rev. et Mag. de Zool.* 1851, p. 376.  
*Platalea leucorodia* (*nec L.*), *Desjardins, P. Z. S.* 1832, p. 111 ;  
*Chapm. Trav. S. Afr.* ii. App. p. 419 (1868 : Lake Ngami).  
*Leucorodia nudifrons*, *Reichenb. Av. Syst. Nat.* p. xvi (1852).  
*Platalea luzoniensis*, *Bp. Consp.* ii. p. 148 (1855).

*Adult female.* Pure white above and below, with a full nuchal crest. The amount of bare skin on the throat is about the same as in *P. leucorodia*, but there is decidedly a larger bare patch on the forehead, the whole region of the eye is bare, and the feathers on the sides of the face do not extend further forward than the line of the hinder part of the eye ; the bill and feet (in skin) are reddish : "fore part of the head bare and of a bright vermilion" (*E. L. Layard*) ; "forehead and chin naked and smooth, the former bright red, merging on the sides of the gape into yellow, which is also the colour of the chin ; upper mandible livid, except the base and a narrow space along the edges, which are reddish ; lower mandible slaty-black, with small yellow spots and yellow edges : feet and toes bright scarlet" (*C. J. Andersson*) ; "iris white or pearly grey" (*Heuglin*). Total length 28 inches, culmen 7, wing 14·8, tail 5·1, tarsus 5·4.

*Young.* Distinguished from the adult by the blackish shafts to the quills and primary-coverts, the primaries blackish brown at the tips and along the outer webs of the outer ones ; the bare face light yellow and the bill dull yellowish : "bill yellowish flesh-colour, the lower mandible dusky reddish, the forehead and bare face tinged with pale violet ; the feet dusky with a fleshy tinge ; iris umber-brown" (*Emin Pasha*).

Another young bird, collected by Mr. Monteiro in Benguela, has the whole of the outer primaries brown, all the quills, and even the secondaries and some of the greater coverts, with dark brown shafts ; crown streaked with blackish brown, especially on the forehead : bill dusky yellowish horn-colour (in skin) ; feet blackish.

*Hab.* Africa generally, and Madagascar.

|                      |                                            |                           |
|----------------------|--------------------------------------------|---------------------------|
| <i>a.</i> Ad. st.    | Gambia.                                    | Sir Edward Sabine<br>[P.] |
| <i>b, c.</i> Ad. sk. | Gambia.                                    | Governor Rendall<br>[C.]  |
| <i>d.</i> ♀ ad. sk.  | Angolala, Shoa ( <i>Sir W. Harris</i> ).   | India Museum.             |
| <i>e.</i> ♂ juv. sk. | Lado, Equatorial Africa, Jan.<br>12.       | Emin Pasha [P.]           |
| <i>f.</i> ♀ ad. sk   | Mooi River, Transvaal ( <i>T. Ayres</i> ). | Gurney Coll.              |
| <i>g.</i> Juv. sk.   | Cape Colony.                               | Sir A. Smith [P.]         |
| <i>h.</i> Juv. sk.   | Benguela.                                  | Monteiro Coll.            |

#### 4. *Platalea minor*.

*Platalea minor*, *Temm. & Schl. Faun. Japon., Aves*, p. 120, pl. 76 (1850) ; *Bp. Consp.* ii. p. 148 (1855) ; *Swinh. Ibis*, 1864, p. 364 ; *Blakist. & Pryer, Ibis*, 1878, p. 223 ; *Seeb. Ibis*, 1879, p. 27

(Japan); *Stejn. Proc. U.S. Nat. Mus.* x. pp. 4, 281 (1887); *Ogilvie Grant, Ibis*, 1889, p. 54, pl. i. figs. 3, 3 a, & 6; *Olphe-Galliard, Contr. Faun. Eur. Occid.* fasc. xv, p. 467, note (1891); *Styan, Ibis*, 1891, pp. 327, 494 (Shanghai, Nov.); *De la Touche, Ibis*, 1892, p. 490 (Foochow; Swatow).

*Platalea major*, part., *Schl. Mus. Pays-Bas, Ciconii*, p. 21 (1865); *Gray, Hand-l. B.* iii. p. 37, no. 10200 (1871).

*Platalea japonica*, *Reichen. J. f. O.* 1877, p. 159.

**Adult male.** Entirely white, and similar to *P. leuceroedia*, with a small but full nuchal crest; bare forehead black, the bare skin extending just behind the eye and occupying the sides of the face, fore parts of cheeks, and upper throat, on which the white feathers impinge in a triangular form in the centre; a yellow spot in front of the eye: "bill slate-colour, transversely barred with black, the bars broken and disconnected on the spatule; apical edge black, succeeded by a patch and scattered spots of orange-ochre over the spatule, which is also freckled with light slate-colour; inside of mouth deep indigo-black; inside of nostrils ochreous; bare skin of face black, with a bright yellow-ochre patch before the eye, extending over the under-lid, and a thin line over the upper lid; legs purplish black; iris blood-red" (*R. Swinhoe*). Total length 27 inches, culmen 7.2, wing 14.6, tail 4.2, tarsus 4.75.

**Adult female.** Similar to the male: "bill flesh-coloured, longitudinally streaked and speckled with blackish, and mottled and freckled with slate-colour, chiefly about the spatule, the former being slate-colour; bare skin of face dull purplish brown; feet purplish black; iris yellowish brown" (*R. Swinhoe*). Total length 26 inches, culmen 7.3, wing 14, tail 4, tarsus 4.7.

**Young.** Differs from the adults in having a more yellowish bill, and blackish shaft-stripes to the quills, the outer primaries blackish at the ends of the outer webs.

**Hab.** From Corea and Japan to Fokien and Swatow in China; Formosa.

|                          |                                                     |                           |
|--------------------------|-----------------------------------------------------|---------------------------|
| a, b. ♂ ♀ ad. sk.        | Tamsui, Formosa, March 17<br>( <i>R. Swinhoe</i> ). | Seebohm Coll.             |
| c. Juv. sk.              | Fokien, China.                                      | Gould Coll.               |
| d, e. Sternum of<br>♂ ♀. | Formosa.                                            | R. Swinhoe, Esq.<br>[P.]. |

## 2. PLATIBIS.

*Platibis*, *Bp. Consp. Av.* ii. p. 149 (1855)..... <sup>Type.</sup> *P. flavipes*.

**Range.** Australia.

### 1. *Platibis flavipes*.

*Platalea flavipes*, *Gould, P. Z. S.* 1837, p. 106; *id. Syn. B. Austr.* pt. iv, App. p. 7 (1838); *id. B. Austr.* vi. pl. 49 (1842); *Gray, List Grall. Brit. Mus.* p. 87 (1844); *id. Gen. B.* iii. p. 559 (1847); *Reichenb. Vög. Neuhol.* p. 26 (1850); *Licht. Nomenc. Av. Mus. Berol.* p. 90 (1854); *Schl. Mus. Pays-Bas, Ciconii*, p. 24 (1864);

*Gray, Hand-l. B.* iii. p. 37, no. 10203 (1871); *Reichen. J. f. O.* 1877, p. 158; *Ramsay, Proc. Linn. Soc. N. S. W.* i. p. 190 (1877), ii. p. 198 (1878), vii. p. 54 (1883); *Bennett, t. c.* p. 324; *North, op. cit.* (2) i. p. 1172 (1887); *Ramsay, Tab. List Austr. B.* p. 20 (1888: Rockingham Bay; Wide Bay District; Richmond & Clarence Rivers; N. S. W.; Interior; Victoria & S. Australia); *Cox & Hamilton, Proc. Linn. Soc. N. S. W.* (2) iv. p. 426 (1890: Mudgee Distr.).

*Platibis flavipes*, *Bp. Consp.* ii. p. 149 (1855); *id. C. R.* lx. p. 724 (1855); *Gould, Handb. B. Austr.* ii. p. 288 (1865); *North, Nests & Eggs Austr. B.* p. 313 (1889).

*Adult male.* General colour white above and below, with a dense tuft of elongated feathers on the fore-neck of a light straw-colour; no visible crest; forehead, region in front of and behind the eye, and upper throat yellow, like the bill, this yellow portion of the face separated from the white plumage of the head by a narrow line of black all round; inner secondaries with disintegrated black webs on the outer web: "bill primrose-yellow, passing into fleshy-pink at the base; legs and feet yellow, nails black; iris straw-white" (*J. Gould*). Total length 38 inches, culmen 9, wing 16·5, tail 6·8, tarsus 5·5.

*Adult female.* Smaller than the male. Total length 36 inches, wing 14·8.

*Young.* Similar to the adults, but without any ornamental plumes, the primaries with the shaft black towards the end; the bill and bare face yellow, but without the black line separating the latter from the plumes of the head; the nostrils are placed in rather a deep sulcus, which becomes smooth in the adult bird.

*Hab.* Confined to Australia.

|                     |                  |                       |
|---------------------|------------------|-----------------------|
| <i>a.</i> ♀ ad. st. | S. Australia.    | Sir George Grey [P.]. |
| <i>b.</i> Juv. sk.  | New South Wales. | Hume Coll.            |
| <i>c.</i> ♂ ad. st. | Australia.       | Purchased.            |
| <i>d.</i> Ad. sk.   | Australia.       | Purchased.            |
| <i>e.</i> Ad. sk.   | Australia.       | Gould Coll.           |
| <i>f.</i> Ad. sk.   | Australia.       | Salvin-Godman Coll.   |
| . Sternum (imp.).   | Australia.       | Sir G. Grey [P.].     |

### 3. AJAJA.

|                                                               |                  |
|---------------------------------------------------------------|------------------|
|                                                               | Type.            |
| <i>Ajaja, Reichenb. Av. Syst. Nat.</i> p. xvi (1852).....     | <i>A. ajaja.</i> |
| <i>Mystrohamphus, Heine, in Heine &amp; Reichen. Nomencl.</i> |                  |
| <i>Mus. Hein.</i> p. 313 (1890) .....                         | <i>A. ajaja.</i> |

*Range.* Confined to America.

#### 1. *Ajaja ajaja.*

*La Spatule couleur de rose, Briss. Orn.* v. p. 356, pl. xxx. (1760).

*La Spatule rouge, Briss. Orn.* v. p. 359 (1760).

*La Spatule couleur de rose de Cayenne, D'Aubent. Pl. Enl.* viii. pl. 165.

*Platalea ajaja, Linn. Syst. Nat.* i. p. 359 (1766); *Gm. Syst. Nat.* i. p. 614 (1788); *Wilson, Amer. Orn.* vii. p. 123, pl. lxii. fig. 1 (1813); *Cuv. Règne An.* i. p. 482 (1817); *Audub. B. Amer.* pl. cccxxi. (c. 1826); *Less. Traité d'Orn.* p. 599 (1831); *Jard. ed.*

- Wilson's Amer. Orn.* iii. p. 26, pl. xliii. fig. 1 (1832); *Neuwied, Beitr. Naturg. Bras.* iv. p. 668 (1833); *Audub. Orn. Biogr.* iv. p. 188 (1838); *Bp. Comp. List B. Eur. & N. Amer.* p. 48 (1838); *D'Orbign. in Ramon de la Sagra, Hist. Nat. Cuba, Ois.* p. 216 (1839); *Audub. B. Amer.* 8vo, vi. p. 72, pl. 362 (1843); *Gray, List Grall. Brit. Mus.* p. 87 (1844); *Tschudi & Cab. Faun. Peruan., Aves*, pp. 50, 298 (1845-46); *Hartl. Ind. Azara*, p. 22 (1847); *Gray, Gen. B.* iii. p. 559 (1847); *Gosse, B. Jamaica*, p. 346 (1847); *Cab. in Schomb. Reis. Guian.* iii. p. 755 (1848); *Bp. Consp.* ii. p. 146 (1855); *Burm. Th. Bras.* iii. p. 427 (1856); *Gundl. J. f. O.* 1856, p. 347 (Cuba); *Cass. in Baird's B. N. Amer.* p. 686 (1858); *Salvin, Ibis*, 1859, p. 467 (Dueñas); *Bryant, Proc. Bost. Soc. N. H.* vii. p. 121 (1859: Bahamas); *Brewer, t. c.* p. 308 (1860: Cuba); *Salv. & Schl. Ibis*, 1860, p. 402 (Guatemala); *Burm. Reise La Plata-St.* ii. p. 511 (1861); *Abbott, Ibis*, 1861, p. 157 (Falkland Is.); *G. C. Taylor, Ibis*, 1862, pp. 129, 201 (Florida); *Albrecht, J. f. O.* 1862, p. 206 (Jamaica); *March, Pr. Philad. Acad.* 1864, p. 65 (Jamaica); *Schl. Mus. Pays-Bas, Ciconii*, p. 214 (1865: Surinam); *Salvin, Ibis*, 1864, p. 285 (British Honduras), 1865, p. 191 (Guatemala); *Léot. Ois. Trinidad.* p. 438 (1866); *Schl. & Salv. P. Z. S.* 1866, p. 200 (Lower Ucayali); *Dresser, Ibis*, 1866, p. 33 (S. Texas); *Schl. & Salv. P. Z. S.* 1868, p. 145 (Conchitas); *Pelz. Orn. Bras.* pp. 304, 456 (1871: Sapitiba, Feb.; Ypanema, March, April; Rio do Boraxudo, Dec.; Cuyaba, May; Villa Maria, Aug.; Caiçara, Nov.; Rio Guaporé, July; Forte do Rio Branco, April, May; Cajutuba); *Gray, Hand-l. B.* iii. p. 37, no. 10205 (1871); *Coues, Key N. Amer. B.* p. 264 (1872); *Schl. & Salv. Nomencl. Av. Neotr.* p. 127 (1873); *id. P. Z. S.* 1873, p. 306 (Ucayali and Santa Cruz); *Lawr. Mem. Bost. Soc. N. H.* ii. p. 309 (1874: Mazatlan); *Gundl. J. f. O.* 1875, p. 311 (Cuba); *Lawr. Bull. U.S. Nat. Mus.* iv. p. 48 (1876: Tehuantepec); *Hudson, P. Z. S.* 1876, p. 15 (Buenos Ayres); *Tacz. P. Z. S.* 1877, p. 746 (Santa Luzia, Peru); *Durnf. Ibis*, 1877, p. 190 (Buenos Ayres); *Sennett, Bull. U.S. Geol. Surv.* iv. p. 58 (1878); *Merrill, Proc. U.S. Nat. Mus.* i. p. 164 (1878: Fort Brown, Texas); *Lawr. t. c.* p. 275 (Grenada Isl.), p. 451 (Guadeloupe); *Cory, B. Bahamas*, p. 164 (1880); *Gibson, Ibis*, 1880, p. 156 (Cape San Antonio); *A. & E. Newt. Handb. Jamaica*, p. 112 (1881); *Tristr. Ibis*, 1884, p. 168 (S. Domingo); *Barrows, Auk*, i. p. 272 (1884: Bahia Blanca); *Salvin, Ibis*, 1885, p. 186 (Cozumel), 1886, p. 172 (British Guiana); *Tacz. Orn. Pérou*, iii. p. 412 (1886: Tumbes); *Berl. J. f. O.* 1887, pp. 33, 124 (Pilcomayo); *Cory, B. Bahamas*, 2nd ed. p. 164 (1890).
- Roseate Spoonbill, *Lath. Gen. Syn.* iii. pt. 1, p. 16, pl. 73 (1785); *Nutt. Man.* ii. p. 79 (1840).
- Espatula, *Azara, Apunt.* iii. p. 128 (1805).
- Platea mexicana, *Gambel, Journ. Philad. Acad.* i. p. 222 (1849).
- Ajaja ajaja, *Reichenb. Av. Syst. Nat.* p. xvi (1852); *Ridgw. Man. N. Amer. B.* p. 123 (1887); *Beckham, Auk*, iv. p. 304 (1887: Bayou Sara, La); *id. Proc. U.S. Nat. Mus.* x. pp. 641, 648 (S.E. Texas); *Chapm. Auk*, v. p. 269 (1888: Florida); *Cory, B. W. Ind.* p. 243 (1889); *Scott, Auk*, vi. p. 14 (1889: Cape Romano, Florida); *Cory, Auk*, viii. p. 351 (1891: Inagua); *Scott, Auk*, ix. p. 211 (1892: Florida); *Cory, Cat. B. W. Ind.* p. 88 (1892); *Allen, Auk*, x. p. 132 (1893); *A. O. U. Check-l. N. Amer. B.* p. 66 (1895); *Ridgw. Man. N. Amer. B.* 2nd ed. p. 122 (1896).
- Platalea ayaya, *Licht. Nomencl. Av. Mus. Berol.* p. 90 (1854).

*Platalea aja*, *Gundl. Orn. Cuba*, p. 160 (1876).

*Platalea rosea*, *Reichen. J. f. O.* 1877, p. 157.

*Ajaia rosea*, *Ridgw. Proc. U.S. Nat. Mus.* iii. p. 10 (1880); *Coues, Check-l. N. Amer. B.* p. 106 (1882); *Nutting, Proc. U.S. Nat. Mus.* v. p. 407 (1882: Gulf of Nicoya, Costa Rica), vi. p. 379 (1883: Nicaragua); *Baird, Brewer, & Ridgw. Water-B. N. Amer.* i. p. 102 (1884); *Coues, Key N. Amer. B.* 2nd ed. p. 651 (1884); *Cory, List B. W. Ind.* p. 28 (1885); *Wells, Proc. U.S. Nat. Mus.* ix. p. 627 (1887: Grenada); *Scl. & Hudson, Argent. Orn.* ii. p. 114 (1889); *Underwood, Ibis*, 1896, p. 450 (Costa Rica).

*Mystrohamphus ajaja*, *Heine in Heine & Reichen. Nomencl. Mus. Hein.* p. 313 (1890: Chili; Caracas; Jalapa).

**Adult male.** General colour white, with a beautiful rosy tinge, inclining to crimson on the bend of the wing; the quills and tail more distinctly rosy, with bright red shafts to the feathers; the head, neck, upper back, throat, fore-neck, and chest white, becoming gradually beautiful rose-colour on the breast, abdomen, under wing-coverts, and quill-lining: "bill yellowish grey at the base, mottled with brownish black, in the rest of its extent pale greenish blue, light on the margins; base of margin of lower mandible greenish yellow; feet pale lake, claws brownish black; iris bright carmine; head yellowish green; space around the eye and gular sac orpiment-orange; a band of black from the lower mandible to the occiput" (*J. J. Audubon*). Total length 25 inches, culmen 6.5, wing 13.8, tail 3.7, tarsus 4.2.

The above description is taken from an adult bird killed in July, but still not in the fullest plumage. In the full breeding-plumage bright crimson plumes are developed on the lesser wing-coverts, upper tail-coverts, sides of flanks, and under tail-coverts, while the tail becomes saffron-yellow. There are also a few crimson plumes on the back of the neck, and a tuft of curly feathers on the fore-neck.

**Adult female.** Resembles the male in colour, but is smaller. Total length 21 inches, wing 13.3.

**Young.** Whiter than the adults, with only a little rosy shade, the shafts to the quills blackish, and the outer primaries dark brown at the tips and on the outer webs.

**Hab.** S.E. United States and Florida, occurring in suitable localities through Central and South America as far south as the Argentine Republic.

|                                            |                                                                 |                           |
|--------------------------------------------|-----------------------------------------------------------------|---------------------------|
| <i>a, b.</i> ♂ ad.; <i>c, d.</i> ♀ ad. sk. | Corpus Christi, Texas, June to Aug. ( <i>F. B. Armstrong</i> ). | Salvin-Godman Coll.       |
| <i>e.</i> Juv. sk.                         | Florida.                                                        | J. E. Harting, Esq. [P.]. |
| <i>f.</i> Ad. sk.                          | Florida ( <i>Henshaw Coll.</i> ).                               | Salvin-Godman Coll.       |
| <i>g, h.</i> ♂ ♀ juv. sk.                  | St. John's River, Florida ( <i>Henshaw Coll.</i> ).             | Salvin-Godman Coll.       |
| <i>i, k.</i> ♂ ad. et juv. sk.             | De Soto County, Florida, Nov. ( <i>W. R. Dean</i> ).            | Salvin-Godman Coll.       |
| <i>l.</i> ♂ ad. sk.                        | Tarpon Springs, Florida, June 15 ( <i>W. E. L. Scott</i> ).     | Salvin-Godman Coll.       |

|                             |                                                        |                                                    |
|-----------------------------|--------------------------------------------------------|----------------------------------------------------|
| m, n. ♂ ♀ juv. sk.          | Mazatlan, W. Mexico, Nov.<br>( <i>A. Forrer</i> ).     | Salvin-Godman Coll.                                |
| o, p. ♂ ♀ ad. sk.           | Tamesi, Tampico, March<br>( <i>W. B. Richardson</i> ). | Salvin-Godman Coll.                                |
| q. ♀ juv. sk.               | Santa Anna, Jalisco, March<br>( <i>W. Lloyd</i> ).     | Salvin-Godman Coll.                                |
| r. s. Ad. sk.               | Cozumel Island ( <i>G. F.</i><br><i>Gaumer</i> ).      | Salvin-Godman Coll.                                |
| t. ♂ ad. sk.                | Chiapam, Guatemala, Jan.<br>( <i>O. S.</i> ).          | Salvin-Godman Coll.                                |
| u. Ad. sk.                  | Huamuchal, Guatemala, Feb.<br>( <i>O. S.</i> ).        | Salvin-Godman Coll.                                |
| v. Ad. sk.                  | Veragua ( <i>E. Arcé</i> ).                            | Salvin-Godman Coll.                                |
| w, x. Juv. st.              | British Guiana.                                        | Sir R. Schomburgk<br>[C.].                         |
| y, z. Ad. sk.               | Savana of British Guiana.                              | J. J. Quelch & F. V.<br>McConnell, Esqrs.<br>[P.]. |
| a'. ♂ ad. sk.               | Espartilla, Argentine Re-<br>public, July 4.           | A. H. Holland, Esq.<br>[C.].                       |
| b'-a'. ♂ ad. et<br>juv. sk. | Uruguay, Oct.                                          | Alan Peel, Esq. [C.].                              |
| c'. Ad. sk.                 | Rio de Janeiro.                                        | J. Miers, Esq. [P.].                               |

## Order XVI. HERODIONES.\*

### *Key to the Families.*

- a.* Hind toe on the same plane as the other toes.
- a'.* Culmen rounded or ridged; bill notched, with no dertral hook at the end; outer toe with a broad basal web, obsolete at base of inner toe; powder-down patches present; loreal space bare; middle claw pectinated. . . . . **Ardeidæ**, p. 56.
- b'.* Culmen flattened and grooved, broad at the base of the forehead and narrowing towards the end, which has a distinct dertral hook; two powder-down patches; lores bare; no web at the base of the inner and outer toe. . . . . **Balænicipitidæ**, [p. 287.]
- c'.* Culmen narrow and ridged, with the nasal groove extending the whole length of the bill; a distinct dertral hook at the tip; no powder-down patches; lores feathered; a distinct web at the base of both inner and outer toe, larger on the latter. . . . . **Scopidæ**, [p. 288.]
- b.* Hind toe elevated above the plane of the other toes; no powder-down patches; bill not hooked at the tip; both toes webbed at the base, the outer one especially; no pectination on middle claw. . . . . **Ciconiidæ**, [p. 290.]

## Family I. ARDEIDÆ.

### *Key to the Genera.*

- a.* Tail-feathers 12.
- a'.* Bare portion of tibio-tarsus equal to or exceeding the length of inner toe and claw.
- a''.* Middle toe very long, equal to the tarsus in length; claw of hallux more than half the length of the hallux itself, and only slightly curved. . . . . 1. **PHOYX**, p. 60.
- b''.* Middle toe shorter, the tarsus longer than the middle toe and claw; the claw of the hallux always curved and not equal to half of the hallux itself.
- a<sup>3</sup>.* Edge of mandibles distinctly serrated; a very faintly indicated notch before the tip of the upper mandible, often obsolete.
- a<sup>4</sup>.* Head crested, the nape-feathers elongated and ornamented; plumes of fore-neck long, but not disintegrated; no dorsal train. . . 2. **ARDEA**, p. 66.

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\* For Appendix, see p. 264.



- b<sup>4</sup>. Head crested, but without ornamental plumes; fore-neck with disintegrated plumes; an immense dorsal train ..... 3. MESOPHOYX, p. 85.
- b<sup>3</sup>. Edge of mandibles not serrated, but with a distinct sub-terminal notch in the upper mandible.
- c<sup>4</sup>. Bill long, but the culmen not exceeding the length of the middle toe and claw.
- a<sup>5</sup>. No crest-plumes; a well-developed dorsal train ..... 4. HERODIAS, p. 88.
- b<sup>5</sup>. Crest-plumes long; elongated ornamental plumes on breast; dorsal plumes of adult reaching far beyond the tail: young white ..... 5. FLORIDA, p. 100.
- c<sup>5</sup>. Elongated plumes present on the crest and on the breast; ornamental plumes on back not reaching beyond the tail..... [p. 104.
- d<sup>4</sup>. Bill long, the culmen exceeding the length of the middle toe and claw. 6. MELANOPHOYX,
- d<sup>5</sup>. Tarsus longer than bill; ornamental plumes varying in form as detailed below.
- a<sup>6</sup>. Tarsus very long, equal to twice the length of the outer toe and claw; nuchal crest and neck-frill composed of lanceolate feathers, very long, like the ornamental plumes of the breast; dorsal train extending far beyond the tail.. [p. 106.
- b<sup>6</sup>. Tarsus only moderate, not twice the length of the outer toe and claw. 7. DICHROMANASSA,
- a<sup>7</sup>. Dorsal train composed of lanceolate plumes not extending beyond the tail; breast-plumes lanceolate.
- a<sup>8</sup>. A full crest, but no elongated pair of nape-plumes ..... 8. NOTOPHOYX, p. 109
- b<sup>8</sup>. Crest less full, with two elongated drooping nape-plumes ..... [p. 114.
- b<sup>7</sup>. Dorsal train very dense, reaching a little beyond the tail, and consisting entirely of decomposed feathers; plumage white. 9. LEPTERODIUS,
- c<sup>6</sup>. No crest on the head, but with drooping nape-plumes; breast with lanceolate white plumes. 10. GARZETTA, p. 118.
- d<sup>6</sup>. An enormous crest of decomposed feathers, covering the crown as

- well as the nape; no elongated nape-plumes; breast-plumes decomposed, not lanceolate .. 11. *LEUCOPHOYX*, [p. 124.]
- e*<sup>3</sup>. Bill longer than tarsus; nape crested, and continued into the neck-frill; crest-feathers of nape very broad, as also the ornamental feathers of the fore-neck; dorsal train extending beyond the tail for some distance ..... 12. *HYDRANASSA*, [p. 126.]
- b*<sup>1</sup>. Bare portion of tibio-tarsus less than the length of the inner toe, the feathering sometimes extending nearly to the heel.
- c*<sup>2</sup>. Bill enormously long, the culmen equal to the length of the tarsus and middle toe and claw combined ..... 14. *AGAMIA*, p. 135.
- d*<sup>1</sup>. Bill only moderately long, never equal to the middle toe and claw combined with the tarsus.
- c*<sup>3</sup>. Bill without serrations in either mandible; the upper mandible with a distinct notch just before the end.
- e*<sup>4</sup>. Culmen longer than tarsus, the latter longer than the middle toe. 15. *DEMIEGRETTA*, [p. 136.]
- f*<sup>1</sup>. Culmen and tarsus about equal.
- f*<sup>3</sup>. Bill slender, higher than broad.
- c*<sup>5</sup>. Tarsus about equal to middle toe and claw; two or three ornamental nape-plumes. .... 16. *NYCTICORAX*, p. 145.
- d*<sup>6</sup>. Tarsus longer than middle toe and claw; a long crest of nuchal plumes; dorsal plumes greatly developed .. 13. *NYCTANASSA*, p. 130.
- g*<sup>3</sup>. Bill flattened, broader than high. 17. *CANCROMA*, p. 163.
- g*<sup>4</sup>. Culmen shorter than tarsus.
- h*<sup>5</sup>. Tarsus reticulated in front .... 18. *GORSACHIUS*, p. 166.
- i*<sup>5</sup>. Tarsus plated in front ..... 19. *SYRIGMA*, p. 170.
- d*<sup>2</sup>. Bill with distinct serrations near the end of the mandibles, sometimes only the upper one serrated; the sub-terminal notch in the bill obsolete.
- h*. Bill moderately long, exceeding the length of the middle toe and claw.
- k*<sup>5</sup>. Throat entirely feathered.
- e*<sup>6</sup>. Tarsus reticulated in front with hexagonal scales.
- c*<sup>7</sup>. Foot strong, the tarsus longer than the culmen; ornamental nape-plumes very long, 4 in number, white, and depending over the centre of the back .. 20. *PILERODIUS*, p. 171.
- d*<sup>7</sup>. Foot weak, the culmen longer than the tarsus;

- ornamental nape - plumes numerous, lanceolate, but not reaching beyond the hind-neck.
- e*<sup>s</sup>. Fore part of cheeks feathered; ornamental dorsal plumes lanceolate; plumage streaked or spotted. . . . . 21. BUTORIDES, p. 172.
- f*<sup>s</sup>. Fore part of cheeks bare; no ornamental dorsal plumes; plumage barred. 22. TIGRORNIS, p. 191.
- f*<sup>o</sup>. Tarsus transversely scaled in front; crest-plumes full and rounded at their ends . . . . . 23. ZONERODIUS, p. 192. [p. 198.]
- f*<sup>s</sup>. Throat feathered in the centre, but bare at the sides . . . . . 25. HETEROCNUS,
- m*<sup>s</sup>. Throat entirely bare . . . . . 24. TIGRISOMA, p. 193.
- i*<sup>s</sup>. Bill equal to middle toe and claw; neck-frill very full, but without long ornamental plumes; no dorsal train . . . . . 26. ERYTHROCYNUS, [p. 200.]
- k*<sup>s</sup>. Bill equal to middle toe and claw; long ornamental nape-plumes; dorsal train well developed . . . . 27. ARDEOLA, p. 201.
- k*<sup>s</sup>. Bill shorter than middle toe and claw 28. BUBULCUS, p. 213.
- b. Tail-feathers 10; bill serrated.**
- e*<sup>s</sup>. Middle toe and claw about equal in length to the tarsus.
- e*<sup>o</sup>. Tibio-tarsus feathered right down to the tarsal joint or heel.
- e*<sup>s</sup>. Crest pointed, but no frill hiding the bare neck; the area behind the eye feathered . . . . . 29. ARDETTA, p. 220.
- f*<sup>s</sup>. Crest very full, in fact enormous, and entirely hiding the bare neck; plumage waved; a bare patch behind the eye . . . . . 30. ZEBRILUS, p. 241.
- f*<sup>o</sup>. Tibio-tarsus bare for some little distance before the heel.
- g*<sup>s</sup>. Bill very short and thick, the culmen equal to the tarsus, which again is equal to the middle toe.
- m*<sup>s</sup>. Wing more pointed, secondaries much shorter than the primaries. 31. NANNOCNUS, p. 242.
- n*<sup>s</sup>. Wing rounded, secondaries equal to or longer than the primaries. . 32. ARDEIRALLUS, [p. 244.]
- k*<sup>s</sup>. Bill much longer, exceeding the length of the tarsus as well as that of the middle toe and claw, which are equal in length to the tarsus . . 33. DUPETOR, p. 246.
- d*<sup>s</sup>. Tarsus far exceeding middle toe and claw 34. ERYTHROPHOYX, [p. 252.]
- e*<sup>s</sup>. Middle toe and claw far exceeding length of tarsus; bill serrated; culmen about equal to inner toe with claw; hind claw very long, nearly equal to the hallux in length . . . . . 35. BOTAURUS, p. 253.

## 1. PHOYX.

Phoyx, *Stejneger, Proc. U.S. Nat. Mus.* x. p. 311 . . . . . <sup>Type.</sup> *P. manillensis*.

*Range.* The temperate portions of Europe and Asia; Africa; Indian Peninsula and Malay Archipelago.

*Key to the Species.*

- a.* Fore part of throat and neck streaked with black. *purpurea*, p. 60.  
*b.* Fore part of throat and neck uniform rufous, not streaked . . . . . *manillensis*, p. 63.

1. *Phoyx purpurea*.

Le Héron pourpré, *Briss. Orn.* v. p. 420 (1760); *Buff. Hist. Nat. Ois.* vii. p. 369 (1781).

Le Héron pourpré hupé, *Briss. Orn.* v. p. 434, pl. xxxvi. fig. 2 (1760); *Daubent. Pl. Enl.* viii. pl. 788.

? Le Grand Butor, *Briss. Orn.* v. p. 455 (1760); *Buff. Hist. Nat. Ois.* vii. p. 422 (1781).

Le Crabier marron, *Briss. Orn.* v. p. 468 (1760); *Buff. Hist. Nat. Ois.* vii. p. 390 (1781).

*Ardea purpurea*, *Linn. Syst. Nat.* i. p. 236 (1766); *Pall. Zoogr. Rosso-Asiat.* ii. p. 119 (1811); *Vieill. Nouv. Dict. d'Hist. Nat.* xiv. p. 420 (1817); *Temm. Man. d'Orn.* ii. p. 570 (1820); *Roux, Orn. Prov.* pls. 312, 313 (1825); *Werner, Atlas, Coureurs*, pl. 24 (1827); *Wagl. Syst. Av.* *Ardea*, sp. 6, p. 175 (1827); *Ménétr. Cat. rais. Cauc.* p. 49 (1832); *Gould, B. Eur.* iv. pl. 274 (1837); *Naum. Vög. Deutschl.* ix. p. 63, Taf. 221 (1838); *Bp. Comp. List B. Eur. & N. Amer.* p. 47 (1838); *Crespon, Orn. Gard*, p. 381 (1840); *Keys. & Blas. Wirb. Eur.* pp. lxxix, 218 (1840); *Nordm. in Démid. Voy. Russ. Mérid.* iii. p. 259 (1840); *Selys-Longch. Faun. Belg.* p. 132 (1842); *Schl. Rev. Crit.* p. xcvi (1844); *Mühle, Orn. Griechenl.* p. 112 (1844); *Gray, List Grall. in Brit. Mus.* p. 76 (1844, pt.); *Rüpp. Syst. Uebers.* p. 120 (1845); *Hewits. Eggs Brit. B.* ii. p. 271, pl. lxxiv. fig. 2 (1846); *Gray, Gen. B.* iii. p. 555 (1847); *Thomps. B. Irel.* ii. p. 155 (1850); *Macgill. Brit. B.* iv. p. 453 (1852); *Schl. Vog. Nederl.* pls. 188, 189 (1854); *Bp. Consp. Av.* ii. p. 113 (1855); *Heugl. Syst. Uebers.* p. 59 (1856); *Hartl. Orn. W.-Afr.* p. 220 (1857: Gambia; Casamance; Ashantee; Mozambique); *Heugl. Ibis*, 1859, p. 345 (Massowa); *Jaub. et Barth.-Lapomm. Rich. Orn.* p. 359 (1859); *Linderm. Vög. Griechenl.* p. 148 (1860); *Tristr. Ibis*, 1860, p. 77; *Gurney, t. c.* p. 220 (Natal); *Poicys, t. c.* p. 345 (Epirus, breeding); *Hartl. J. f. O.* 1861, p. 269 (Bissao); *Gray, List Brit. B.* p. 145 (1863); *Schl. Mus. Pays-Bas, Ardeæ*, p. 8 (1863, pt.); *Roch & E. Newton, Ibis*, 1863, p. 170 (Madagascar); *E. Newton, t. c.* p. 455; *Wright, Ibis*, 1864, p. 143 (Malta, spring and autumn); *Kirk, t. c.* p. 332 (Zambesi, breeding in February); *Gigl. Ibis*, 1865, p. 59 (Pisa, breeding); *Godm. Ibis*, 1866, pp. 101, 107 (Azores); *E. C. Taylor, Ibis*, 1867, p. 70 (Egypt); *Degl. et Gerbe, Orn. Eur.* ii. p. 290 (1867); *Loche, Expl. Sci. Algér., Ois.* ii. p. 130 (1867); *Layard, B. S. Afr.* p. 306 (1867: throughout the Colony; Zambesi); *Sundev. Sv. Fogl.* pl. 77. fig. 1 (1856-72); *Tristr. Ibis*, 1868, p. 325 (Palestine); *Gurney, t. c.* p. 468 (Natal); *Schl. & Poll. Faune Madag., Ois.* p. 123 (1868: Mayotte); *Beltoni, Ucc. nidif. Lomb.* ii. pl. 39 (1865-70); *Borggr. Vogelf. Norddeutschl.* p. 121 (1869); *Drake, Ibis*, 1869, p. 154 (Tangier); *Saunders, t. c.* p. 181 (Spain); *Ayres, t. c.* p. 302 (Transvaal); *Layard, t. c.* p. 376 (eggs); *Doderl. Avif. Sicil.* p. 210 (1869); *Godman, Azores*, p. 33 (1870); *Elwes &*

- Buckley, Ibis*, 1870, p. 333 (Bulgaria); *Fritsch, Vög. Eur.* tab. xliii. figs. 1, 6 (1870); *Finsch & Hartl. Vög. Ostaf.* p. 676 (1870); *Salvad. Faun. Ital., Ucc.* p. 240 (1871); *Saunders, Ibis*, 1871, p. 390 (Seville, breeding); *R. Gray, B. West Scott.* p. 276 (1871: Caithness and Aberdeenshire); *Gray, Hand-l. B.* iii. p. 27, n. 10102 (1871); *Harting, Handb. Br. B.* p. 55 (1872); *Gurney in Anderss. B. Dam. Ld.* p. 286 (1872: Okavango R.; Lake N'gami); *Shelley, B. Egypt*, p. 266 (1872); *Gould, B. Gt. Brit.* iv. pl. 21 (1873); *Brooke, Ibis*, 1873, p. 340 (Sardinia, migrant); *Antin. & Salvad. Viagg. Bogos*, p. 114 (1873: Anseba); *Heugl. Orn. N.O.-Afr.* ii. Abth. i. p. 1051 (1873: Red Sea; Somali coast; Abyssinia, 6000–9000 ft.; Blue and White Niles); *Buckley, Ibis*, 1874, p. 390 (Transvaal, breeding); *Dresser, B. Eur.* vi. p. 217, pl. 396 (1875); *Gurney, Ibis*, 1875, p. 142 (Algiers); *Dunford & Harrie-Brown, t. c.* p. 424 (Transylvania, breeding); *Fallon, Ois. Belg.* p. 160 (1875); *Irby, B. Gibr.* p. 182 (1875); *Barratt, Ibis*, 1876, p. 210 (Orange Free State and Transvaal); *Blanf. Geol. and Zool. East. Persia*, ii. p. 296 (1876); *Sharpe & Bouvier, Bull. Soc. Zool. France*, i. p. 313 (1876: Chiloango); *Tacz. Bull. Soc. Zool. France*, ii. p. 159 (1877: Poland); *Reichen. J. f. O.* 1877, p. 13 (Loango Coast); *id. t. c.* p. 266; *Hurtl. Vög. Madag.* p. 296 (1877); *Dunford, Ibis*, 1878, p. 34 (Asia Minor); *Bocage, Orn. Angola*, p. 438 (1881: Loanda; Humbé); *Milne-Edwards & Grandid. H. N. Madag., Ois.* p. 543 (1882); *Holub & Pelz. Beitr. Orn. Südaf.* p. 271 (1882); *Butler, Feilden, & Reid, Zool.* 1882, p. 344 (Buffalo River); *Seebohm, Ibis*, 1882, p. 225 (Astrakhan); *B. O. U. List Brit. B.* p. 108 (1883); *Seebohm, Ibis*, 1883, p. 32 (Caucasus); *Forbes, t. c.* p. 524 (R. Niger); *Saunders, ed. Yarrell's Brit. B.* iv. p. 172 (1884); *Seebohm, Hist. Brit. B.* ii. p. 473 (1884); *Chapman, Ibis*, 1884, p. 74 (Spain, breeding); *Eagle Clarke, t. c.* p. 146 (Obedska Bara; Dobanovci); *Radde, Orn. Cauc.* pp. 42, 397 (1884: 2300–6300 ft.); *Tristr. Faun. and Flor. Palest.* p. 109 (1884); *Whitehead, Ibis*, 1885, p. 44 (Corsica); *Ayres, Ibis*, 1886, p. 294 (Potchefstroom); *Sharpe, t. c.* p. 490 (Fao, breeding), p. 498 (Bushire); *Gigl. Avif. Ital.* p. 277 (1886); *Salvad. Elenco Ucc. Ital.* p. 242 (1886); *Tait, Ibis*, 1887, p. 373 (Portugal, breeding); *Collett, Vidensk. Forhandl. Christiania*, 1887, no. 8, p. 8; *Saunders, Man. Brit. B.* p. 357 (1889); *Reichen. Syst. Verz. Vög. Deutschl.* p. 41 (1889); *Meade-Waldo, Ibis*, 1889, p. 4 (Canary Is.); *Guillem. t. c.* p. 215 (Larnaka); *Lilford, t. c.* p. 343 (Cyprus); *Brusina, Motr. etc. (Orn. Croat.)* p. 72 (1890); *Reiser, Vogels. Mus. Sarajevo*, p. 110 (1891); *Madarász, Erläut. Ausst. Ungar. Vogelf.* p. 105 (1891); *Frivaldsky, Ar. Hung.* p. 128 (1891); *Sharpe, Ibis*, 1891, p. 112 (Fao); *Dresser, t. c.* p. 369 (Erzerum); *Gütke, Vogelw. Helgol.* p. 450 (1891); *Seebohm, Ibis*, 1892, p. 22 (Heligoland); *Hartert, t. c.* p. 512 (E. Prussia); *Reichen. J. f. O.* 1892, p. 12 (Bukome, Oct.); *Meade-Waldo, Ibis*, 1893, p. 198 (Canary Is.); *Reichen. JB. Hamb. Wissensch. Anst.* x. p. 8 (1893: Qua-qua R.); *id. Vög. Deutsch-Ost-Afr.* p. 65 (1894: Ugalla; Tonga; Bukóme); *Sjöstedt, Mitth. deutsch. Schutzgeb.* viii. p. 15 (1895: Cameroons).
- Ardea rufa*, *Scop. Ann.* i. p. 87 (1769).
- Ardea variegata*, *Scop. t. c.* p. 88.
- Ardea caspia*, *S. G. Gmelin, Reis. Russl.* ii. p. 193, pl. 14 (1774); *Leach, Syst. Cat. Mamm. &c. Brit. Mus.* p. 33 (1816); *Brehm, Vög. Deutschl.* p. 581 (1831).
- Crabier roux, *Buff. Hist. Nat. Ois.* vii. p. 390 (1781).
- ? Greater Bittern, *Lath. Gen. Syn.* iii. pt. i. p. 58 (1785).
- Crested Heron, *Lath. t. c.* p. 95.
- The Purple Heron, *Lath. t. c.* p. 96; *Yarrell, Brit. B.* ii. p. 450 (1843).
- Rufous Heron, *Lath. t. c.* p. 99.

*Ardea purpurata*, *Gm. Syst. Nat.* i. p. 641 (1788).

*Ardea rufa*, *Gm. t. c.* p. 642.

*Ardea botaurus*, *Gm. t. c.* p. 636.

*Ardea badia*, *Gm. t. c.* p. 644.

*Ardea monticola*, *La Peyr. fide Wagler, Syst. Av.*, *Ardea*, sp. 6 (1827).

*Ardea purpurascens*, *Brehm, Vög. Deutschl.* p. 583 (1831).

*Ardea pharaonica*, *Bp. Consp. Av.* ii. p. 113 (1855).

*Phovx purpurea*, *Stejneger, Proc. U.S. Nat. Mus.* x. p. 311 (1887);

*Sharpe, Bull. B. O. Club*, iii. p. xxxviii (1894), v. p. xi (1895);

*id. Handb. Brit. B.* iii. p. 66, pl. lxv. (1896).

*Adult male.* General colour above dark slate-colour, with elongated narrow plumes of hoary grey and light rufous depending from the scapulars and inner secondaries; wing-coverts light slaty grey washed with reddish brown, and with maroon-brown on the lesser series and round the bend of the wing; bastard-wing, primary-coverts, and quills blue-black, the secondaries more grey externally and slightly glossed with olive-green, the inner secondaries almost entirely grey; tail-feathers slaty grey; crown of head crested, black, with two long plumes depending from the nape; sides of face and sides of neck bright chestnut, marked with black in the following manner:—from the base of the bill a black line crosses on the ear-coverts, unites on the nape, and runs down the hind-neck for half its length, the rest of hind-neck slaty grey,—a second line starts also from the base of the bill and runs down each side of the neck, forming a broad black line; cheeks and upper throat white; on the centre of the lower throat commence some black-streaked feathers, which, at first very small, become gradually more and more developed on the fore-neck, which is at the same time whiter than the throat; the lateral feathers on the fore-neck produced into elongated drooping plumes, which are slaty grey, inclining to white at the ends; on each side of the chest is a large patch of maroon-chestnut, the feathers of which are slaty black externally as they approach the breast, which, with the abdomen, is also slaty black, the under tail-coverts being similarly coloured and mottled with white bases; sides of body slaty grey; thighs pale cinnamon; under wing-coverts chestnut; axillaries and quill-lining slaty grey, the former with a slight wash of rufous: “upper mandible brownish black, lower mandible brownish yellow, yellow at tip; cere greenish yellow; tarsi and feet black on anterior face, brownish yellow behind; bare part of thigh yellow; iris pale yellow” (*F. H. H. Guillemard*). Total length about 30 inches, culmen 4·8, wing 14·3, tail 5, tarsus 5·2.

*Adult female.* Similar to the male, but not so finely coloured, the black nuchal plumes shorter, and the streaked plumage on the fore-neck not so strongly developed. Total length 34 inches, culmen 5·1, wing 13·2, tail 4·5, tarsus 5·5.

*Winter plumage of adults.* Similar to the summer plumage, but without the two long black plumes on the nape, and the whitish elongated plumes of the scapulars and fore-neck less developed.

*Young.* Much browner than the adults, all the feathers of the upper surface broadly bordered with sandy buff; the reddish scapular plumes very short and feebly developed; inner secondaries strongly glossed with oily green, and with sandy-buff margins; the neck yellowish buff, slightly tinged with chestnut here and there;

the lower throat minutely and the fore-neck broadly streaked with dusky brown; forehead blackish; hinder crown dull chestnut; sides of face uniform yellowish buff; cheeks and upper throat white; sides of breast reddish buff, mottled with grey bases to the feathers; centre of breast and abdomen buffy white, streaked with dusky.

*Hab.* Central and Southern Europe, occasionally visiting the British Islands; occurring eastwards to the Caucasus and Persian Gulf, and probably to Turkestan; wintering in most parts of Africa and Madagascar.

|                                  |                                                                  |                                     |
|----------------------------------|------------------------------------------------------------------|-------------------------------------|
| <i>a, b.</i> Ad. st.             | [England.]                                                       | Mr. J. Baker.                       |
| <i>c.</i> ♀ ad. sk.              | Fogaras, Hungary, Aug. 11<br>( <i>E. Czynk</i> ).                | Hungarian National<br>Museum [P.].  |
| <i>d, e.</i> Ad. st.             | Athens.                                                          | Consul Merlin [P.].                 |
| <i>f, g.</i> ♂ ♀ ad. sk.         | Larnaka, Cyprus, April ( <i>F.</i><br><i>H. H. Guillemard</i> ). | Lord Lilford [P.].                  |
| <i>h, i.</i> Ad. sk.             | Fayoom, Egypt ( <i>G. E. S.</i> ).                               | Shelley Coll.                       |
| <i>k.</i> Imm. sk.               | Elmina ( <i>F. H. Blissett</i> ).                                | Shelley Coll.                       |
| <i>l.</i> Ad. sk.                | Gold Coast.                                                      | Shelley Coll.                       |
| <i>m, n.</i> Juv. sk.            | Fantee ( <i>H. T. Ussher</i> ).                                  | Shelley Coll.                       |
| <i>o.</i> Juv. sk.               | Kingwilliamstown.                                                | Major Trevelyan [P.].               |
| <i>p, q.</i> Ad. sk.             | South Africa.                                                    | Sir A. Smith [C.].                  |
| <i>r.</i> Ad. sk.                | Transvaal ( <i>F. Oates</i> ).                                   | W. E. & C. G. Oates,<br>Esqs. [P.]. |
| <i>s.</i> ♂ ad. sk.              | Transvaal ( <i>T. Ayres</i> ).                                   | A. Foresman, Esq.<br>[P.].          |
| <i>t.</i> ♀ ad. sk.              | Potchefstroom, June 7 ( <i>T. A.</i> ).                          | Gurney Coll.                        |
| <i>u.</i> Juv. sk.               | Tete, Zambesi ( <i>Sir J. Kirk</i> ).                            | Livingstone Exped.                  |
| <i>v, w.</i> Juv. sk.            | Zambesi ( <i>Dr. Bradshaw</i> ).                                 | Shelley Coll.                       |
| <i>x, y.</i> Ad. et imm. sk.     | Zambesi ( <i>Dr. Bradshaw</i> ).                                 | Shelley Coll.                       |
| <i>z, a'.</i> Juv. sk.           | Upper Shiré River, Nov. ( <i>A.</i><br><i>Whyte</i> ).           | Sir H. H. Johnston<br>[P.].         |
| <i>b'.</i> Juv. sk.              | Shoa ( <i>Sir W. Harris</i> ).                                   | India Museum [P.].                  |
| <i>c', d'.</i> ♂ ♀ juv.<br>sk.   | Marshes of Babylonia ( <i>Com-<br/>mander Jones</i> ).           | India Museum.                       |
| <i>e'.</i> Ad. sk.               | Bushire.                                                         | A. J. V. Palmer, Esq.<br>[P.].      |
| <i>f, g'.</i> Ad. et juv.<br>sk. | Fao, Persian Gulf.                                               | W. D. Cumming, Esq.<br>[P.].        |
| <i>h'.</i> Skeleton.             |                                                                  | Purchased.                          |
| <i>i', k'.</i> Sterna of ♂ ♀.    |                                                                  | Purchased.                          |
| <i>l'.</i> Sternum.              | Europe.                                                          | M. Lefebvre.                        |

## 2. Phoyx manillensis. (Plate I.)

*Ardea purpurea* (*nec Linn.*), *Horsf. Trans. Linn. Soc.* xiii. p. 188 (1821); *Hodgs. Icon. ined. in Brit. Mus., Grall.* pls. 59, 60, no. 592; *id. in Gray's Zool. Misc.* p. 86 (1844); *Gray, List Grall. in Brit. Mus.* p. 76 (1844, pt.); *id. Gen. B.* iii. p. 555 (1847, pt.); *Blyth, Cat. B. Mus. As. Soc.* p. 278 (1849: Calcutta); *Bp. Consp. Av.* ii. p. 113 (1855, pt.); *Motley & Dillw. Nat. Hist. Labuan*, p. 34 (1855); *Irby, Ibis*, 1861, p. 244 (Oudh); *Scl. P. Z. S.* 1863, p. 222 (Banjermassing); *Schl. Mus. Pays-Bas, Ardeæ*, p. 8 (1863, pt.); *Jerd. B. Ind.* iii. p. 743 (1864); *Pelz. Reis. Novara, Vög.* pp. 18, 162 (1865); *Beavan, Ibis*, 1868, p. 397 (Ganges); *Hume, Ibis*, 1869, p. 238 (Etawah, breeding); *Gray, Hand-l. B.* iii. p. 27, no. 10102 (1871, pt.); *Swinh. P. Z. S.* 1871, p. 411 (Hankow, Central China); *Hayes Lloyd, Ibis*, 1873, p. 418 (Kathiawar); *Salvad. Ucc. Born.* p. 345 (1874); *Wald. Ibis*, 1874, p. 148 (Port



Blair); *Hume, Str. F.* iii. p. 190 (1875: Pegu); *Blyth & Wald. B. Burm.* p. 159 (1875); *Wald. Tr. Zool. Soc.* ix. p. 236 (1875); *Butler & Hume, Str. F.* iv. p. 23 (1876: N. Guzerat); *Fairb. t. c.* p. 263 (Deccan); *Hume, Str. F.* v. p. 46 (1877: N.E. Cachar); *Sharpe, Ibis*, 1877, p. 24 (Bintulu); *Tweedd. t. c.* p. 323 (Sumatra); *David & Oust. Ois. Chine*, p. 438 (1877); *Hume & Davison, Str. F.* vi. p. 472 (1878: Thatone; Khykehto; Tavoy); *Hume, Str. F.* vii. p. 39 (1878: Travancore); *Butler, t. c.* p. 189 (E. Narra); *Ball, t. c.* p. 230 (Ganges to Godavery); *Cripps, t. c.* p. 307 (Faridpur); *Doig, t. c.* p. 467 (Sindh, breeding); *Hume, t. c.* p. 490 (Calcutta); *Hume, Str. F.* viii. p. 114 (1879); *id. t. c.* p. 159 (Tonka); *Vidal, t. c.* p. 173 (S. Konkan); *Doig, t. c.* p. 372 (E. Narra); *Legge, B. Ceylon*, p. 1132 (1879); *Meyer, Ibis*, 1879, p. 143 (N. Celebes; Tomini Bay); *Butler, Cat. B. Sind etc.* p. 69 (1879); *id. Cat. B. S. Bomb. Pres.* p. 82 (1880: Ratnigiri; Deccan; Belgaum); *Vidal, Str. F.* ix. p. 88 (1880: S. Konkan); *Butler, t. c.* p. 433 (S. Mahratta Country); *Reid, Str. F.* x. p. 74 (1881: Lucknow); *Davidson, Str. F.* x. p. 323 (1882: W. Khandeish); *Davison, t. c.* p. 416 (1883: Nilghiris); *Parker, Ibis*, 1883, p. 95 (Ceylon, migrant); *Murray, Vertebr. Faun. Sind*, p. 269 (1884); *Swinh. & Barnes, Ibis*, 1885, p. 135 (Mhow); *Macgregor, Str. F.* x. p. 442 (1887: Bidi Taluka); *Hume, Str. F.* xi. p. 332 (1888: Manipur); *Everett, Journ. Straits Br. As. Soc.* 1889, p. 189; *Sharpe, Ibis*, 1890, pp. 146, 285 (Benkoka); *Styan, Ibis*, 1891, pp. 327, 491 (Lower Yangtse, migrant); *De la Touche, t. c.* p. 488 (Foochow); *Stejn. Pr. U.S. Nat. Mus.* xiv. p. 493 (1891); *Hose, Ibis*, 1893, p. 420 (Baram).

*Ardea purpurea*, var. *manillensis*, *Meyen, Acta Acad. Leop.-Carol.* xvi. *Suppl.* p. 102; *id. Reis. um die Erde*, iii. p. 226 (1831).

*Phoyx manillensis*, *Sharpe, Bull. B. O. Club*, iii. p. xxxviii (1894), v. p. xi (1895).

*Adult male.* Similar to *P. purpurea*, but distinguished by its uniform chestnut lower throat and fore-neck, which have scarcely any black streaking at all, by the much more distinct lateral black streaks on the neck, by the slaty-black colour of the chest, abdomen, and under tail-coverts: "upper mandible dark brown, the margins dusky yellow as far back as the nostrils, produced to the eye; margins from nostrils to gape dark brown; anterior half of lower mandible clear yellow, the posterior half dull yellow; gape and facial skin greenish yellow; edges of the eyelids yellow; feet and toes yellowish, the front of the tarsus and toes glossy brown; claws dark horn-colour; iris yellow" (*E. W. Oates*). Total length 30 inches, culmen 6.2, wing 14.7, tail 5.4, tarsus 5.3

*Adult female.* Similar to the male, but not quite so bright, and the black crest-plumes not quite so long.

*Nestling.* Crown of head, quills, and tail lavender-brown; throat and chin pure white; sides of head and upper neck rufous; lower neck rufous-grey, the feathers on the sides being centred with brown; lower plumage rufescent, each feather more or less dark-centred; thighs plain rufous; upper plumage brown, each feather edged with rufescent, more especially on the scapulars and tertiaries; upper and lower wing-coverts bluish brown, each feather broadly edged with rufous (*E. W. Oates*).

*Hab.* Indian Peninsula and Ceylon, eastwards to the Yangtse River in China, and south through the Burmese countries, Malay Peninsula, Sumatra, Java, and Borneo, to Celebes and the Philippine Islands.



|                                              |                                                                 |                     |
|----------------------------------------------|-----------------------------------------------------------------|---------------------|
| <i>a.</i> Ad. st.                            | India.                                                          | Purchased.          |
| <i>b.</i> ♂ ad. sk.                          | Gurgaon Distr., Nov. ( <i>W. N. Chill</i> ).                    | Hume Coll.          |
| <i>c.</i> ♂ Juv. sk.                         | N.W. Provinces, Nov. 16.                                        | Hume Coll.          |
| <i>d, e.</i> Ad. sk.                         | Jhansie, April, June.                                           | Hume Coll.          |
| <i>f.</i> Ad. sk.                            | Kurnal, March.                                                  | Hume Coll.          |
| <i>g-k.</i> Juv. sk.                         | Etawah, Nov., Dec.                                              | Hume Coll.          |
| <i>l.</i> Juv.; <i>m.</i> ad. sk.            | Oudh, Dec., April.                                              | Hume Coll.          |
| <i>n.</i> Ad. sk.                            | Nepal.                                                          | Hodgson Coll.       |
| <i>o.</i> Ad. sk.                            | Mundla Distr., April.                                           | Hume Coll.          |
| <i>p.</i> Imm. sk.                           | Khandeish.                                                      | Tweeddale Coll.     |
| <i>q.</i> ♀ ad. sk.                          | Vellarney Lake, Travancore<br>June 21 ( <i>F. Bourdillon</i> ). | Hume Coll.          |
| <i>r.</i> Juv. sk.                           | Dacca.                                                          | Hume Coll.          |
| <i>s.</i> Ad. sk.                            | Calcutta.                                                       | Hume Coll.          |
| <i>t.</i> Ad. sk.                            | Assam ( <i>McClelland</i> ).                                    | India Museum.       |
| <i>u.</i> ♀ ad. sk.                          | Dipur Bheel, Assam, Dec. ( <i>A. W. Chennell</i> ).             | Tweeddale Coll.     |
| <i>v.</i> ♀ ad. sk.                          | N. Khasia Hills, March ( <i>A. W. Chennell</i> ).               | Tweeddale Coll.     |
| <i>w.</i> Ad. sk.                            | Cachar ( <i>J. Inglis</i> ).                                    | Hume Coll.          |
| <i>x, y.</i> ♂ ♀ ad.; <i>z.</i><br>juv. sk.  | Pegu, Aug., Feb. ( <i>E. W. O.</i> ).                           | Oates Coll.         |
| <i>a'.</i> ♂ ad. sk.                         | Logtak Lake, Manipur, Feb. 15<br>( <i>A. O. H.</i> ).           | Hume Coll.          |
| <i>b'.</i> Imm. sk.                          | Burma.                                                          | Tweeddale Coll.     |
| <i>c'.</i> Ad. sk.                           | Tonghoo, Nov. ( <i>R. G. W. R.</i> ).                           | Tweeddale Coll.     |
| <i>d'.</i> Ad. sk.                           | 12 miles east of Rangoon,<br>June 10 ( <i>E. W. Oates</i> ).    | Hume Coll.          |
| <i>e'.</i> ♂ juv. sk.                        | Khykehto, Tenasserim, Jan. 3<br>( <i>W. Davison</i> ).          | Hume Coll.          |
| <i>f, g'.</i> ♂ ad.; <i>h'.</i><br>♀ ad. sk. | Thatone, Aug. ( <i>W. Davison</i> ).                            | Hume Coll.          |
| <i>i'.</i> Juv. sk.                          | Tavoy, April ( <i>W. Davison</i> ).                             | Hume Coll.          |
| <i>k', l'.</i> ♀ ad. et<br>juv. sk.          | Salang, Feb., March ( <i>J. Darling</i> ).                      | Hume Coll.          |
| <i>m'.</i> Ad. sk.                           | Tapraw, Jan. ( <i>J. Darling</i> ).                             | Hume Coll.          |
| <i>n'-q'.</i> Ad. et juv.<br>sk.             | Penang ( <i>Dr. Cantor</i> ).                                   | India Museum.       |
| <i>r'.</i> ♀ juv. sk.                        | Jerome, Salangore, Aug. 19<br>( <i>W. Davison</i> ).            | Hume Coll.          |
| <i>s', t'.</i> ♀ imm. sk.                    | South Andamans, Feb., Sept.<br>( <i>R. J. Wimberley</i> ).      | Tweeddale Coll.     |
| <i>u'.</i> ♂ ad. sk.                         | Aberdeen, S. Andamans,<br>Dec. 26 ( <i>W. Davison</i> ).        | Hume Coll.          |
| <i>v'.</i> ♀ ad. sk.                         | Trinkut Is., Nicobars, Jan. 29<br>( <i>R. J. Wimberley</i> ).   | Tweeddale Coll.     |
| <i>w', x'.</i> ♂ ad. sk.                     | Mt. Sago, Sumatra, Sept., Oct.<br>( <i>C. Bock</i> ).           | Tweeddale Coll.     |
| <i>y'-c'.</i> ♂ ♀ ad. sk.                    | Siedjonndjong, Sumatra, Sept.<br>( <i>C. Bock</i> ).            | Tweeddale Coll.     |
| <i>d'.</i> Ad. sk.                           | Java.                                                           | Seebohm Coll.       |
| <i>e'.</i> Juv. sk.                          | Manila, Luzon ( <i>Maitland Heriot</i> ).                       | Tweeddale Coll.     |
| <i>f'.</i> ♂ ad. sk.                         | Palgayan, Baram River, Dec.                                     | C. Hose, Esq. [C.]. |
| <i>g'.</i> Juv. sk.                          | Celebes.                                                        | Salvin-Godman Coll. |
| <i>h'.</i> Ad. sk.                           | Hankow ( <i>R. Swinhoe</i> ).                                   | Seebohm Coll.       |
| <i>i'.</i> Bones of trunk.                   | Nepal.                                                          | Hodgson Coll.       |

## 2. ARDEA.

|                                                           | Type.            |
|-----------------------------------------------------------|------------------|
| Ardea, <i>Linn. Syst. Nat.</i> i. p. 283 (1766) .....     | A. cinerea.      |
| Typhon, <i>Reichnb. Av. Syst. Nat.</i> p. xvi (1852) .... | A. sumatrana.    |
| Ardeomega, <i>Bp. Consp.</i> ii. p. 109 (1855) .....      | A. goliath.      |
| Audubonia, <i>Bp. Consp.</i> ii. p. 113 (1855) .....      | A. occidentalis. |
| Megerodius, <i>Heine, J. f. O.</i> 1860, p. 200 .....     | A. goliath.      |

*Range.* Nearly cosmopolitan.

*Key to the Species.*

- a. Plumage particoloured in adult and young.
  - a'. Head and crest-feathers chestnut; under tail-coverts also chestnut like the under surface of the body ..... *goliath*, p. 66.
  - b'. Head and crest-feathers ashy grey or slate-colour; the ornamental dorsal plumes pearly grey.
    - a''. Breast, abdomen, and under tail-coverts slaty grey; ornamental plumes on chest pearly grey ..... *sumatrana*, p. 68.
    - b''. Breast, abdomen, and under tail-coverts pure white; ornamental plumes on chest pure white ..... *insignis*, p. 70.
  - c'. Crown of head black or slaty black.
    - c''. Throat and under surface of body dark slaty grey, including the under tail-coverts ..... *humbloti*, p. 70.
    - d''. Throat white, the lower throat mottled with black and white.
      - a'''. Sides of neck black like the hind-neck; ornamental plumes on fore-neck pearly grey; remainder of under surface, including the under tail-coverts, ashy grey; under wing-coverts white ..... *melanocephala*, p. 70.
      - b'''. Sides of neck white, like the hind-neck; underparts black, broadly streaked with white, the under tail-coverts white; sides of face white, like the sides of the neck and the ornamental plumes of the fore-neck.. *cocoi*, p. 72.
  - d'. Crown of head white, black on the sides and the nape-crest.
    - e''. Thighs white; edge of wing white or creamy white ..... *cinerea*, p. 74.
    - f''. Thighs light chestnut, as also the edge of the wing ..... *herodias*, p. 80.
- b. Entirely white above and below, in adult and young ..... *occidentalis*, p. 84.

1. *Ardea goliath*.

*Ardea goliath*, *Cretzschm. in Rüpp. Atlas*, p. 39, pl. 36 (1826); *Temm. Pl. Col.* v. pl. 474 (1829); *Blyth, Ann. N. H.* xiii. p. 176 (1844); *Rüpp. Syst. Uebers.* p. 120 (1845); *Gray, Gen. B.* iii. p. 555 (1847); *Blyth, Cat. B. Mus. As. Soc.* p. 278 (1849: Calcutta); *Heugl. Syst. Uebers.* p. 58 (1856); *Hartl. Orn. W.-Afr.* p. 219 (1857: Senegal); *Heugl. Ibis*, 1859, p. 345 (Red Sea)

- Cass. Proc. Phil. Acad.* 1859, p. 173 (Camma River); *Gurney, Ibis*, 1860, p. 220 (Natal); *Schl. Mus. Pays-Bas*, Ardeæ, p. 3 (1863); *Kirk, Ibis*, 1864, p. 332 (Zambesi: Lake Nyasa); *Layard, B. S. Afr.* p. 305 (1867: Colesberg); *Gurney, Ibis*, 1868, p. 256 (Natal); *Schl. & Pollen, Faune Madag., Ois.* p. 122 (1868); *Layard, Ibis*, 1869, p. 376 (Zoetendals Vley); *Finsch & Hartl. Vög. Ostaf.* p. 674 (1870); *Gray, Hand-l. B.* iii. p. 27, no. 10107 (1871); *Gurney in Anderss. B. Dam. Ld.* p. 285 (1872: Okavango R.; Teoughe R.; Lake Ngami); *Heugl. Orn. N.O.-Afr.* ii. Abth. i. p. 1048 (1873: Red Sea to 24° N. lat.; Gulf of Aden; Abyssinia to 6000 feet; Takah; Senaar; E. Kordofan; White Nile to Equator); *Barratt, Ibis*, 1876, p. 193 (Lydenberg); *Blanf. East. Persia*, ii. p. 295 (1876); *Hartl. Vög. Madag.* p. 297 (1877); *Ayres, Ibis*, 1877, p. 349 (Transvaal); *Hume, Str. F.* vii. p. 490 (1878: Calcutta); *id. Str. F.* viii. p. 115 (1879); *Parker, Str. F.* ix. p. 486 (1880: ? in Ceylon); *Butler, Str. F.* x. p. 149 (1881: Natal, breeding); *Bocage, Orn. Angola*, p. 437 (1881: Humbe); *Holub & Pelz. Beitr. Orn. Südaf.* p. 273 (1882: West Griqua Land; Zambesi); *Butler, Feilden, & Reid, Zool.* 1882, p. 343 (Ingagani R.; Buffalo R., breeding); *Milne-Edwards & Grandid. H. N. Madag., Ois.* p. 542 (1882); *Shelley, Ibis*, 1882, p. 263 (Mashoona); *W. A. Forbes, Ibis*, 1883, pp. 505, 515 (Niger); *Fischer, J. f. O.* 1885, p. 118 (Osi River; Kipini); *Sibree, Ibis*, 1892, p. 116 (Madagascar); *Sharpe, Bull. B. O. Club*, iii. p. v (1893: Suakin); *Shelley, Ibis*, 1894, p. 27 (Upper Shiré River).
- Ardea nobilis*, *Blyth, Ann. & Mag. N. H.* xiii. p. 175 (1844); *Gray, Gen. B.* iii. p. 555 (1847); *Reichen. J. f. O.* 1877, p. 268; *id. J. f. O.* 1887, p. 50 (Ruwana River).
- Ardea gigantodes*, *Licht. Nomencl. Av. Mus. Berol.* p. 89 (1854).
- Ardeomega goliath*, *Bonap. Consp. Av.* ii. p. 109 (1855).
- Megerodius goliath*, *Heine, J. f. O.* 1860, p. 200; *id. & Reichen. Nomencl. Mus. Hein.* p. 306 (1890); *Reichen. Vög. Deutsch-Ost-Afr.* p. 65 (1894: Bagamayo; Kingani; Ugalla; Tanganyika).
- Ardea* (*Megalerodius*) *nobilis*, *Reichen. J. f. O.* 1877, p. 13 (Chinchonxo).

*Adult female.* General colour above slaty grey, the scapular feathers pointed and elongated, the wing-coverts like the back, with a slight olive-green gloss; quills and tail-feathers dark slate-grey; crown of head much crested, of a deep vinous chestnut: sides of face, ear-coverts, and neck clearer vinous red; the cheeks and upper throat pure white; the lower throat and fore-neck purplish black, slightly varied with white streaks or margins to the feathers; on the fore-neck a large bunch of elongated white plumes, some with vinous-red margins, and all mesially streaked with black; on each side of the chest is a large patch of vinous maroon like the rest of the under surface of body; the under wing-coverts and axillaries slightly lighter maroon; the thighs maroon like the breast, but having the lower part slaty grey; bend of the wing varied with white and rufous, and here and there mottled with grey: "bill black, lower part of under mandible pale; bare skin round the eye yellowish green; tarsi, shanks, and feet black; iris bright gamboge-yellow" (*T. Ayres*). Total length 56 inches, culmen 7.4, wing 20, tail 8.4, tarsus 8.9.

*Young.* Differs from the adult in being much duller, the rufous of the head and neck not so bright, and all the wing-coverts tipped with rufous or rusty buff; the breast is white, below broadly streaked with rusty edges to the feathers.

The British Museum received from the India Museum in 1880 an Indian specimen of *A. goliath*, which had doubtless been forwarded to England by Mr. Blyth when he procured the historical specimens, which are still the only ones known to have occurred within the limits of India. Mr. Hume (Str. F. vii. p. 490) relates that he not only watched the Calcutta market for some years in the hopes of obtaining a specimen of the Great Heron, but had even offered a large reward for one. He never succeeded in getting a specimen, nor could he find anybody who knew the bird at all. The specimen from the India Museum is a young bird, and is identical with another specimen in the Museum from South Africa.

The Giant Heron from Suakin seems to me to be somewhat different from that inhabiting South Africa. It is much lighter and more pearly grey, and with the neck of a delicate vinaceous colour, quite different to the rufous or chestnut colour of the neck in the South-African bird. Total length about 50 inches, culmen 6·5, wing 20·5, tail 9·8, tarsus 8·1.

*Hab.* Africa generally. Once recorded from India.

|                               |                                                           |                                     |
|-------------------------------|-----------------------------------------------------------|-------------------------------------|
| <i>a.</i> Imm st.             | Africa.                                                   | Zoological Society.                 |
| <i>b, c.</i> Imm. sk.         | South Africa.                                             | Purchased.                          |
| <i>d.</i> ♀ ad. sk.           | Durban, Natal, Sept. ( <i>Gordye</i> ).                   | Shelley Coll.                       |
| <i>e.</i> ♀ ad. sk.           | Potchefstroom, Transvaal,<br>Nov. 30 ( <i>T. Ayres</i> ). | Sharpe Coll.                        |
| <i>f.</i> Ad. sk.             | Upper Shiré River ( <i>A. Whyte</i> ).                    | H. H. Johnston, Esq.,<br>C.B. [P.]. |
| <i>g.</i> ♀ ad. sk.           | Suakin, Feb.                                              | Capt. Curtis [P.].                  |
| <i>h</i> Imm. sk.             | Calcutta ( <i>Blyth</i> ).                                | India Museum.                       |
| <i>i.</i> Skeleton (imperf.). |                                                           | Salvin-Godman Coll.                 |
| <i>k.</i> Skeleton.           | South Africa.                                             | Salvin-Godman Coll.                 |

## 2. *Ardea sumatrana*.

*Ardea sumatrana*, *Raffl. Tr. Linn. Soc.* xiii. p. 325 (1822); *Gray, Gen. B.* iii. p. 556 (1847); *Blyth, Cat. B. Mus. As. Soc. Beng.* p. 278 (1849); *Jerd. B. Ind.* iii. p. 740 (1864); *Gould, Handb. B. Austr.* ii. p. 296 (1865); *Ramsay, P. Z. S.* 1868, p. 387; *Walden, Tr. Z. S.* viii. p. 98 (1872); *Salvad. Ucc. Born.* p. 344 (1874); *Blyth, B. Burm.* p. 159 (1874); *Salvad. Ann. Mus. Genov.* x. p. 165 (1877); *Ramsay, Proc. Linn. Soc. N. S. W.* ii. p. 198 (1877); *Reichen. J. f. O.* 1877, p. 267; *Hume, Str. F.* vi. p. 469 (1878), viii. p. 114 (1879); *Salvad. Ann. Mus. Genov.* xviii. p. 332 (1882).

*Ardea typhon*, *Temm. Pl. Col.* pl. 475 (1829); *Less. Traité*, p. 576 (1831); *Reichenb. Syst. Av.* Taf. cclix. fig. 466; *Gray, Gen. B.* iii. p. 555 (1847); *id. P. Z. S.* 1860, p. 363 (Batchian); *Schl. Mus. Pays-Bas, Ardeæ*, p. 3 (1863); *Wall. P. Z. S.* 1853, p. 487 (Flores); *Finsch, Neu-Guinea*, p. 183 (1865); *Schl. N. T. D.* iii. p. 348 (1866: Aru Isl.); *Rosenb. Malay. Arch.* pp. 109, 278, 373 (1878-79).

*Ardea rectirostris*, *Gould. P. Z. S.* 1843, p. 22 (N. S. W.); *Gray, Gen. B.* iii. p. 556 (1847); *Gould. B. Austr.* vi. pl. 54 (1848):

*Reichenb. Grall. Novit.* Taf. clv. fig. 2671 (1851); *Gray, P. Z. S.* 1858, p. 179; *id. Cat. B. New Guinea*, p. 63 (1859).

*Ardea robusta*, *Bp. Consp.* ii. p. 110 (1855, *ex S. Müll. MSS.*).

*Typhon temmincki*, *Reichenb. Syst. Av. Nat.* p. xvi (1852).

*Ardeomega nobilis*, *Bp. Consp.* ii. p. 109 (1855); *Blyth, Ibis*, 1865, p. 36.

*Ardea goliath (nec T.)*, *Bp. Consp.* ii. p. 110 (1855, *ex Celebes*).

*Typhon robusta*, *Bp. Consp.* ii. p. 110 (1855); *id. C. R.* xl. p. 722 (1855).

*Typhon sumatrana*, *Bp. Consp.* ii. p. 110 (1855); *id. C. R.* xl. p. 722 (1855).

*Typhon rectirostris*, *Bp. t. c.* p. 110.

**Adult male.** General colour above dull slaty grey, the lower back and rump paler grey; the upper tail-coverts more dusky; the scapulars with elongated plumes, which are pearly white at the ends; wing-coverts and quills dark slaty grey, with a slight greenish gloss on some of them; the innermost secondaries elongated and tipped with pearly white, like the scapulars; tail-feathers dark slate-colour, slightly glossed with green; crown of head slaty grey and crested, the crest-feathers with dusky margins, and with some long drooping plumes on the nape, which are pearly white at the ends; sides of face and hinder cheeks pale vinaceous brown; fore part of cheeks and upper throat white; neck all round slaty brown, the feathers mostly elongated, and with a mesial streak of white towards the ends, the plumes on the fore-neck similarly coloured, but very much elongated; remainder of under surface slaty grey, paler on the abdomen, with longitudinal white centres to the feathers, these being indistinct upon the abdomen and under tail-coverts; on each side of the upper breast a large patch of slaty-grey feathers, very slightly streaked with white; under wing-coverts and axillaries slaty grey with white streaks; the marginal feathers round the bend of the wing white: "bill black, the lower mandible yellowish white at the base: legs and feet black, soles faded yellow; iris pale orange" (*H. O. Forbes*). Total length about 45 inches, culmen 6·8, wing 18·3, tail 6·1, tarsus 6·7.

**Young.** Differs from the adult in having no elongated plumes, and being everywhere browner, the feathers of the upper surface tipped with a rufous or sandy-buff spot, the feathers of the neck and underparts vinaceous rufous with mesial streaks of white, the whole under surface very thickly streaked.

**Hab.** From Aracan and Southern Tenasserim throughout the Malayan Peninsula to Australia.

|                                 |                                                            |                   |
|---------------------------------|------------------------------------------------------------|-------------------|
| <i>a.</i> Ad. sk.               | Arakan ( <i>E. Blyth</i> ).                                | India Museum.     |
| <i>b.</i> ♂ imm. sk.            | Mergui Distr., Nov. 9 ( <i>W. Davison</i> ).               | Hume Coll.        |
| <i>c.</i> Ad. sk.               | Bankasoon, Feb. 18 ( <i>W. Davison</i> ).                  | Hume Coll.        |
| <i>d.</i> ♂ ad. sk.             | Kossoum, Malayan Peninsula, Jan. 18 ( <i>J. Darling</i> ). | Hume Coll.        |
| <i>e.</i> Juv. sk.              | Island of Billiton.                                        | Tweeddale Coll.   |
| <i>f, g, h.</i> Ad. et juv. sk. | Lumbidan, N.W. Borneo.                                     | Gov. Ussher [C.]. |

|                          |                                                              |                                |
|--------------------------|--------------------------------------------------------------|--------------------------------|
| i. Imm. sk.              | Taguso, Palawan, Sept. 6.                                    | J. Whitehead, Esq.<br>[P.].    |
| k. Ad. sk.               | Sanghir Islands.                                             | Tweeddale Coll.                |
| l. ♂ ad. sk.             | Larut, Tenimber Islands,<br>Sept. 8 ( <i>H. O. Forbes</i> ). | Frank Nicholson,<br>Esq. [P.]. |
| m. Ad. sk.               | Island of Goram.                                             | Wallace Coll.                  |
| n. Juv., head only.      | Batchian.                                                    | Wallace Coll.                  |
| o. Juv. st.              | Australia.                                                   | Earl of Derby [P.].            |
| p. Ad. st.               | Port Essington.                                              | Dr. Sibbald [P.].              |
| q. Juv. sk.              | Queensland ( <i>J. T. Cockerell</i> ).                       | Salvin-Godman Coll.            |
| r, s. Ad. et juv.<br>sk. | New South Wales.                                             | Imperial Institute<br>[P.].    |

### 3. *Ardea insignis*.

*Ardea insignis*, *Hodgs. Icon. ined. Grall.* pl. 61, fig. 2, no. 645; *id. in Gray's Zool. Misc.* p. 86 (1844).

*Ardea nobilis* (*nec Blyth*), *Gray, List Grallæ Brit. Mus.* p. 75 (1844); *id. Cat. Mamm. etc. Nepal pres. Hodgs.* p. 143 (1846).

*Adult.* Similar to *A. sumatrana*, but larger, of a purer ashy grey, especially on the head and neck, the breast with beautiful lanceolate white plumes; the nuchal crest composed of delicate grey feathers; the breast and abdomen, under tail-coverts, under wing-coverts, and axillaries pure white; the thighs also white in front, slaty grey behind. Total length about 40 inches, culmen 6·1, wing 21·2, tail 7·8, tarsus 6·5.

*Young.* Much browner than the adult, and having none of the ornamental plumes, the upper surface streaked with light brown, but distinguished from the young of *A. sumatrana* by its pure white breast and abdomen.

*Hab.* Nepal and Sikhim in the Eastern Himalayas.

|                       |                                             |               |
|-----------------------|---------------------------------------------|---------------|
| a, b. Ad. et juv. sk. | Nepal.                                      | Hodgson Coll. |
| c, d, e. Ad. sk.      | Sikhim, Jan., April ( <i>L. Mandelli</i> ). | Hume Coll.    |
| f, g. Ad. sk.         | Darjiling.                                  | Hume Coll.    |

### 4. *Ardea humbloti*.

*Ardea humbloti*, *Milne-Edw. & Grandid. Hist. Nat. Madag. Ois.* p. 546 (1882).

*Adult.* General colour all over dark slate-colour, including the wings and tail, some of the inner secondaries blackish; crown of head black; sides of face and throat, with a few black feathers intermixed: "upper mandible black; lower mandible yellow, darker at the tip; feet black; iris yellow" (*A. Grandidier*). Total length 37 inches, culmen 5·2, wing 16·3, tail 5·7, tarsus 6·2.

*Hab.* East coast of Madagascar.

|                |             |            |
|----------------|-------------|------------|
| a. Vix ad. sk. | Madagascar. | Purchased. |
|----------------|-------------|------------|

### 5. *Ardea melanocephala*.

*Ardea melanocephala*, *Vig. & Childr. in Denh. & Clapp. Voy.* ii., App. p. 201 (1826: Lake Tchad; Bournou); *Gray, List Grall. in Brit. Mus.* p. 76 (1844); *id. Gen. B.* iii. p. 555 (1847); *Gerbe, Rev. et Mag. de Zool.* 1854, p. 6 (S. France); *Loche, Expl. Sci.*

*Alger.*, *Ois.* ii. p. 129 (1867: accidental in Algeria); *Degl. et Gerbe, Orn. Eur.* ii. p. 289 (1867: occasional in S. Europe); *Finsch & Hartl. Vög. Ostaf.* p. 680 (1870); *Dresser, B. Eur.* vi. p. 225, pl. 397 (1871); *Gray, Hand-l. B.* iii. p. 26, no. 10100 (1871); *Gurney in Anderss. B. Dam. Ld.* p. 284 (1872: Great Namaqua and Damara Lands; Ondonga); *Heugl. Orn. N.O.-Afr.* ii. Abth. i. p. 1055 (1873: Khartoum; Berber; Taka; E. and Central Abyssinia to 9000 feet; Senaar; Kordofan; White Nile; west to Kosanga); *Reichen. J. f. O.* 1877, p. 264; *Oust. Nouv. Arch. Mus.* (2) ii. *Bull.* p. 118 (1879: Doumé); *Bocage, Orn. Angola*, p. 440 (1881: Rio Coroca; Quillengues; Humbe); *Sharpe in Oates's Matabele Land*, App. B, p. 326 (1881: Pretoria); *Gurney, Ibis*, 1881, p. 128 (Mombasa); *Shelley, P. Z. S.* 1881, p. 599 (Usambara Hills); *Milne-Edwards & Grandid. H. N. Madag.*, *Ois.* p. 546 (1882); *Butler, Feilden, & Reid, Zool.* 1882, p. 343 (Ingagani River); *Sharpe's ed. Layard, B. S. Afr.* p. 119, 708 (1884); *Salvad. Ann. Mus. Gen.* (2) i. p. 227 (1884: Lake Cialalaka, Shoa); *Fischer, Zeitschr. ges. Orn.* i. p. 384 (1884: Pangani; Maurui; Natron Lakes); *id. J. f. O.* 1885, p. 118 (Kingani River: Malindi; Kipini); *Ayres, Ibis*, 1886, p. 293 (Potchefstroom); *W. Ayres, Ibis*, 1887, p. 63 (Umzeila's Country); *Emin. J. f. O.* 1891, p. 345; *Reichen. J. f. O.* 1892, p. 12 (Bukoba); *Shelley, Ibis*, 1894, p. 27 (Upper Shiré River); *Reichen. Vög. Deutsch-Ost-Afr.* p. 65 (1894: Usambara; Kakoma).

*Ardea atricollis*, *Wagl. Syst. Av.*, *Ardea*, p. 174, sp. 4 (1827); *Smith, Ill. Zool. S. Afr., Birds*, pl. lxxxvi. (1843); *Des Murs, Iconogr. Orn.* pl. xxx. (1846); *Bonap. Consp. Av.* ii. p. 111 (1855); *Hartl. J. f. O.* 1855, p. 361 (Ashanti); *Heugl. Syst. Uebers.* p. 58 (1856); *Hartl. Orn. West-Afr.* p. 220 (1857: Senegambia; Gaboon); *Gurney, Ibis*, 1859, p. 153 (Ibadan); *id. Ibis*, 1860, p. 220 (Natal); *Hartl. J. f. O.* 1861, p. 269 (Bissao); *Kirk, Ibis*, 1864, p. 332 (Zambesi); *Antin. Cat. descr. Ucc.* p. 103 (1864: Senaar; Kordofan; White Nile); *Monteiro, P. Z. S.* 1865, p. 89 (Benguela); *Schl. P. Z. S.* 1866, p. 425; *Layard, B. S. Afr.* p. 306 (1867: Cape Town; Colesberg; George; Verloren Vley); *Grand. Rev. et Mag. de Zool.* 1867, p. 419; *Schl. & Poll. Faun. Madag.*, *Ois.* p. 122 (1888: Mayotte); *Blanf. Geol. & Zool. Abyss.* p. 434 (1870: Adabagi, 8000 feet; near Adigrat); *Barratt, Ibis*, 1876, p. 193 (Lydenberg); *Hartl. Vög. Madag.* p. 295 (1877); *Holub & Pelz. Beitr. Orn. Südaf.* p. 271 (1882: Bechuana Land to Pantama-tenka Valley); *Forbes, Ibis*, 1883, p. 521 (Niger); *Sibree, Ibis*, 1892, p. 116 (Madagascar).

*Adult male.* General colour above blackish, with a strong shade of ashy grey on the mantle and upper back; lower back, rump, and upper tail-coverts clear slaty blue, the scapular feathers elongated into drooping plumes, slaty grey at the base, becoming hoary whitish towards the tips; wing-coverts pearly grey, with white margins to the greater series, which are slaty grey internally; inner secondaries also slaty grey; bastard-wing, primary-coverts, and quills black, with white bases, and externally slightly dusted with slaty grey; tail-feathers black; crown of head and hind-neck black, with a shade of slaty grey, especially on the nuchal plumes; sides of face from below the eye also black; cheeks and sides of face, in a line with the gape across the ear-coverts, white, as also the throat; the lower throat black, varied with white bases to the feathers, producing a streaked



or spotted appearance; the feathers of the fore-neck light pearly grey, the ornamental plumes whitish at the ends, the centre ones white with broad black streaks; the long feathers on each side of the chest, the whole of the breast and abdomen, as well as the thighs and under tail-coverts, light pearly grey; under wing-coverts and axillaries white: "bill dusky brown, the under mandible paler; the bare skin about the base of the bill and eye whitish buff; feet, toes, and bare part of tarsi black; iris tawny yellow, with an outer ring of dark umber" (*T. Ayres*). Total length 36.5 inches, culmen 4, wing 15.7, tail 6, tarsus 5.2.

*Adult female*. Similar to the male, but with the ornamental plumes less developed. Total length 30 inches, culmen 3.9, wing 10.5, tail 6, tarsus 5.1.

*Young*. Differs from the adult in being more dingy and brownish grey; the head black, hind-neck slaty grey, as also the sides of face; under surface almost entirely white, with a tinge of fawn-colour on the fore-neck, these parts being sparsely streaked with black; the patch on each side of the chest isabelline, with white in the centre.

*Hab.* Africa, occasionally visiting Algeria and Southern Europe.

|                                 |                                                           |                                     |
|---------------------------------|-----------------------------------------------------------|-------------------------------------|
| <i>a, b.</i> Ad. et juv.<br>st. | South Africa.                                             | Sir A. Smith [C.].                  |
| <i>c.</i> ♂ juv. sk.            | Pretoria, June 21 ( <i>F. Oates</i> ).                    | W. E. & C. G. Oates, Esqs. [P.].    |
| <i>d.</i> ♂ ad. sk.             | Potchefstroom, Transvaal,<br>July 22 ( <i>T. Ayres</i> ). | Gurney Coll.                        |
| <i>e, f.</i> ♂ ♀ ad. sk.        | Umziela's Country, May ( <i>W. Ayres</i> ).               | Gurney Coll.                        |
| <i>g.</i> Juv. sk.              | Upper Shiré River, Nov. ( <i>A. Whyte</i> ).              | H. H. Johnston, Esq.,<br>C.B. [P.]. |
| <i>h.</i> Imm. sk.              | Usambara Hills, Pangani R.<br>( <i>Kirk</i> ).            | Shelley Coll.                       |
| <i>i.</i> Ad. sk.               | Mombasa.                                                  | Rev. A. F. Buxton<br>[P.].          |
| <i>k.</i> ♂ ad. sk.             | Adabaga, Tigré, Abyssinia,<br>7500 feet, May 20.          | W. T. Blanford, Esq.<br>[C.].       |
| <i>l.</i> Juv. sk.              | Fantee, W. Africa ( <i>H. T. Ussher</i> ).                | Sharpe Coll.                        |
| <i>m.</i> Ad. sk.               | Benguela.                                                 | Monteiro Coll.                      |
| <i>n.</i> Skeleton.             | S. Africa.                                                | Earl of Derby [P.].                 |
| <i>o.</i> Skull.                | Gambia.                                                   | Earl of Derby [P.].                 |

## 6. *Ardea cocoi*.

The Blew Heron, *Albin, Nat. Hist. B.* iii. p. 74, pl. 79 (1740).

Le Héron hupé de Cayenne, *Briss. Orn.* v. p. 400 (1760).

*Ardea cocoi*, *Linn. Syst. Nat.* i. p. 237 (1766); *Gm. Syst. Nat.* i. p. 629 (1788); *Licht. Verz. Doubl.* p. 77 (1823: San Paulo); *Neuwied, Beitr. Naturg. Bras.* iv. p. 598 (1833); *Gray, List Grallæ Brit. Mus.* p. 76 (1844); *id. Gen. B.* iii. p. 555 (1847); *Hartl. Ind. Azara*, p. 22 (1847); *Gay, Faun. Chilen.* i. p. 409 (1847); *Tschudi & Cab. Faun. Peruan., Aves*, p. 50 (1845-46); *Cab. in Schomb. Reis. Guian.* iii. p. 752 (1848); *Bp. Consp.* ii. p. 110 (1855); *Burm. Th. Bras.* iii. p. 415 (1856); *id. Reis. La Plata-St.* ii. p. 508 (1861: Paraná; Tucuman; Cordova); *Schl. Mus. Pays-Bas, Ardeæ*, p. 6 (1863); *Léot. Ois. Trinid.* p. 401



- (1866); *Scl. & Salv. P. Z. S.* 1866, p. 199 (Upper & Lower Ucayali); *Scl. P. Z. S.* 1867, p. 339 (Chili); *id. & Salv. P. Z. S.* 1869, p. 634 (Conchitas); *Gray, Hand-l. B.* iii. 27, no. 10103 (1871); *Pelz. Orn. Bras.* pp. 300, 455 (1871: Sapitiba; Ypanema; Cuyaba; Caiçara; Matogrosso; Rio Branco; Barado; Rio Negro); *Scl. & Salv. Nomencl. Av. Neotr.* p. 125 (1873); *id. P. Z. S.* 1873, p. 305 (Upper Amazons, universal); *Hudson, P. Z. S.* 1875, p. 629 (Buenos Ayres); *Durnf. Ibis*, 1877, p. 198 (Buenos Ayres); *W. A. Forbes, P. Z. S.* 1877, p. 307; *Ridgw. Bull. U.S. Geol. Surv.* iv. no. 1, p. 244 (1878); *Gibson, Ibis*, 1880, p. 158 (Cape San Antonio); *Tacz. P. Z. S.* 1882, p. 47 (Corral, N.E. Peru); *White, P. Z. S.* 1883, p. 41 (Cordova); *Barrows, Auk*, i. p. 271 (1884: Entrerios); *Baird, Brewer, & Ridgw. Water-B. N. Amer.* i. p. 6 (1884); *Tacz. Orn. Pérou*, iii. p. 390 (1886); *Scl. & Hudson, Argent. Orn.* ii. p. 93 (1889); *Berkeley James, New List Chilean B.* p. 8 (1892: occasional visitor).
- Le Soco, Buff. Hist. Nat. Ois.* vii. p. 379 (1780).
- Cocoi Heron, Luth. Gen. Syn.* iii. pt. 1, p. 98 (1785).
- Garza aplomada, Azara, Apunt.* iii. p. 148 (1805).
- Ardea caerulescens, Vieill. N. Dict. d'Hist. Nat.* xiv. p. 413 (1817) *Licht. Nomencl. Av. Berol.* p. 89 (1854: Montevideo).
- Ardea coco, Vieill. N. Dict. d'Hist. Nat.* xiv. p. 433 (1817).
- Ardea fuscicollis, Vieill. N. Dict. d'Hist. Nat.* xiv. p. 410 (1817).
- Ardea plumbea, Merrem, in Ersch u. Grub. Encycl.* v. p. 177 (1820).
- Ardea maguari, Spir, Av. Bras.* tab. xc. (1824).
- Ardea major, Fraser, P. Z. S.* 1843, p. 116 (Chili).
- Ardea palliata, "Illiger," teste Hartlaub (sed ubi?), Licht. Nomencl.* p. 89 (1854).

**Adult male.** General colour above light slaty blue, with greatly developed scapular plumes, which are narrowed towards the ends, where they gradually become white; lower back, rump, and upper tail-coverts uniform pale slaty blue; wing-coverts also slaty blue, the outer ones of all the series externally white; bastard-wing, primary-coverts, and quills black; inner secondaries externally slaty blue, and the innermost entirely slaty blue like the back; tail-feathers entirely slaty blue; crown of head crested, blue-black, including all the feathers round the eye; crest long and drooping on the nape; sides of face, ear-coverts, entire neck, and throat creamy white; the plumes of the fore-neck greatly elongated and pure white, the centre of the throat marked with a number of broad black-striped feathers; on each side of the chest a patch of blue-black feathers; on the centre of the breast the white feathers edged with black, producing a streaked appearance; the sides of the breast and abdomen black; thighs and under tail-coverts white; sides of body and thighs light slaty blue, like the axillaries and under wing-coverts; the edge of the wing very conspicuously white. Total length about 36 inches, culmen 6.1, wing 18.5, tail 7.1, tarsus 7.2.

**Adult female.** Similar to the male in colour, but with the elongated plumes not quite so strongly developed: "bill dark yellow, base black, lower mandible yellow; skin round the eye pale green; iris pale yellow" (*F. Withington*). Total length about 40 inches, culmen 5.6, wing 17.7, tail 7.2, tarsus 6.5.

*Young.* A little browner than the adults and, of course, devoid of all drooping plumes; the head much browner than the adults, or having the blackish feathers brown-shafted; under surface of body almost entirely white, with only a few black streaks on the breast: "lower mandible yellow, as also the lower edge of the upper one; iris light yellow" (*F. Withington*).

*Hab.* South America.

|                                |                                                                     |                                        |
|--------------------------------|---------------------------------------------------------------------|----------------------------------------|
| <i>a.</i> Ad. st.              | South America.                                                      | Lieut. Maw [P.].                       |
| <i>b.</i> Ad. sk.              | South America.                                                      | Old Coll.                              |
| <i>c.</i> Juv. sk.             | St. Joseph Bay, E. Patagonia.                                       | Sir W. Burnett & Admiral Fitzroy [P.]. |
| <i>d.</i> Ad. sk.              | Straits of Magellan.                                                | The Admiralty [P.].                    |
| <i>e.</i> Ad. sk.              | Chili.                                                              | Salvin-Godman Coll.                    |
| <i>f.</i> ♀ juv. sk.           | Belgrano, Buenos Ayres, Dec. 2, 1876.                               | H. Durnford, Esq. [C.].                |
| <i>g, h.</i> ♀ ad. et juv. sk. | Lomas de Zamora, Buenos Ayres, May, April ( <i>F. Withington</i> ). | Sclater Coll.                          |
| <i>i.</i> Ad. sk.              | Bahia, Brazil ( <i>Dr. Wucherer</i> ).                              | Salvin-Godman Coll.                    |
| <i>k.</i> ♂ ad. sk.            | Pebas, E. Peru, Oct. 17 ( <i>J. Haurwell</i> ).                     | Salvin-Godman Coll.                    |

### 7. *Ardea cinerea*.

The Heron or Heronshaw, *Albin, Nat. Hist. B. i.* p. 64, pl. 67 (1738).

The Common Heron, *Albin, Nat. Hist. B. iii.* p. 73, pl. 78 (1740); *Lath. Gen. Syn. iii.* pt. 1, p. 83 (1785); *Yarr. Br. B. ii.* p. 444 (1843).

Le Héron, *Briss. Orn. v.* p. 392, pl. xxxiv. (1760); *Daubent. Pl. Enl. viii.* pl. 787.

Le Héron hupé, *Briss. Orn. v.* p. 396, pl. xxxv. (1760); *Daubent. Pl. Enl. viii.* pl. 755.

Le Héron cendré, *Briss. Orn. v.* p. 403 (1760).

Le Héron tacheté, *Briss. Orn. v.* p. 410 (1760).

*Ardea cinerea*, *Linn. Syst. Nat. i.* p. 236 (1766); *Gm. Syst. Nat. i.* p. 627 (1788); *Pall. Zoogr. Rosso-Asiat. ii.* p. 116 (1811); *Temm. Man. d'Orn. ii.* p. 567 (1820); *Horsf. Trans. Linn. Soc. xiii.* p. 188 (1820); *Werner, Atlas, Coureurs*, pl. 23 (1827); *Brehm, Vög. Deutschl.* p. 580 (1831); *Ménétr. Cat. Rais. Cauc.* p. 49 (1832); *Gould, B. Eur. iv.* pl. 273 (1837); *Naum. Vög. Deutschl. ix.* p. 24, pl. 220 (1838); *Bp. Comp. List B. Eur. & N. Amer.* p. 47 (1838); *Crespon, Orn. Gard*, p. 379 (1840); *Keys. u. Blas. Wirb. Eur.* pp. lxxix, 218 (1840); *Nordm. in Démid. Voy. Russ. Mérid. iii.* p. 258 (1840); *Selys-Longch. Faun. Belg.* p. 132 (1842); *Schl. Rev. Crit.* p. cxvi (1844); *Mühle, Orn. Griechenl.* p. 113 (1844); *Gray, List Grall. in Brit. Mus.* p. 76 (1844); *Hodgs. Icon. ined. in Brit. Mus., Grall.* pl. 61. fig. 1, no. 646; *id. in Gray's Zool. Misc.* p. 86 (1844); *Rüpp. Syst. Uebers.* p. 120 (1845); *Gray, Cat. Mamm. etc. Nepal pres. Hodgs.* p. 133 (1846); *Hewits. Eggs Brit. B. ii.* p. 269, pl. lxxiv. fig. 1 (1846); *Gray, Gen. B. iii.* p. 555 (1847); *Blyth, Cat. B. Mus. As. Soc.* p. 278 (1849: Calcutta); *Temm. & Schl. Faun. Jap.* p. 114 (1850); *Thomps. B. Irel. ii.* p. 133 (1850); *Kjærbo. Danm. Fugle*, pl. xxxii. fig. 1 (1852); *Macgill. Brit. B. iv.* p. 440 (1852); *Schl. Voy. Nederl.* pls. 186, 187 (1854); *Brehm, Naum.* 1855, p. 289; *Bp.*

*Consp. Av.* ii. p. 111 (1855); *Cass. in Perry's Exped.* p. 244 (1856: Loo Choo); *Heugl. Syst. Uebers.* p. 58 (1856); *Hartl. Orn. W.-Afr.* p. 219 (1857: Gaboon); *Grill, Zool. Anteckn.* App. ii. 55 (1859: Knysna); *Sundev. Sv. Fogl.* pl. 46. figs. 3, 4 (1856-72); *Jaub. et Barth.-Lapomm. Rich. Orn.* p. 357 (1859); *Schrenck, Reis. Amurl.* p. 434 (1859: Amurland); *Tristr. Ibis*, 1859, p. 37 (River Jordan); *E. C. Taylor, t. c.* p. 50 (Egypt); *Gurney, t. c.* p. 248 (Natal); *Linderm. Vög. Griechenl.* p. 149 (1860); *Swinh. Ibis*, 1860, p. 63 (Amoy, winter); *Tristr. t. c.* p. 77; *Gurney, t. c.* p. 205 (Natal); *Pourys, t. c.* p. 346 (Corfu; Albania; Montenegro); *Reinh. Ibis*, 1861, p. 9 (Greenland); *Swinh. t. c.* p. 51 (Hongkong); *Irby, t. c.* p. 244 (Oudh); *Swinh. t. c.* p. 343 (Pekin); *Hartl. J. f. O.* 1861, p. 269 (Bissao); *Schl. Mus. Pays-Bas, Ardeæ*, p. 5 (1863); *Swinh. Ibis*, 1863, p. 417 (Formosa); *Newton in Baring-Gould's Iceland*, p. 414 (1863: Grimsev, September); *Gray, List Brit. B.* p. 145 (1863); *Radde, Reis. Sibir., Vög.* p. 343 (1863: Lake Baikal; Dauria); *Jerd. B. Ind.* iii. p. 741 (1864); *Adams, Ibis*, 1864, p. 31 (Egypt); *Wright, t. c.* p. 143 (Malta, spring & autumn); *Swinh. t. c.* p. 415 (Formosa); *Gould, B. Gt. Brit.* iv. pl. 20 (1865); *Blyth, Ibis*, 1865, p. 36; *Gigl. t. c.* p. 59 (Pisa); *More, t. c.* p. 433; *Gould, Handb. B. Austr.* ii. p. 295 (1865: New South Wales); *Godm. Ibis*, 1866, p. 100 (Azores, resident); *Degl. et Gerbe, Orn. Eur.* ii. p. 286 (1867); *Layard, B. S. Afr.* p. 306 (1867: throughout the Colony); *E. C. Taylor, Ibis*, 1867, p. 70 (Egypt); *Baird, t. c.* p. 282 (Iceland & Greenland); *Tyrwhitt Drake, t. c.* p. 428 (Tangiers); *Loche, Expl. Sci. Algér., Ois.* ii. p. 126 (1867); *Dyb. & Parr. J. f. O.* 1868, p. 337 (Dauria); *Schl. & Pollen, Faune Madag., Ois.* p. 122 (1868: Madagascar & Mayotte); *Sperling, Ibis*, 1868, p. 292 (Mozambique & Zanzibar); *Tristr. t. c.* p. 325 (Palestine); *Beavan, t. c.* p. 397 (Julpigoorie & Barrackpur); *Smith, t. c.* p. 453 (Portugal); *Borggr. Vogelf. Norddeutshl.* p. 122 (1869); *Doderl. Avif. Sicil.* p. 209 (1869); *Layard, Ibis*, 1869, p. 376 (eggs); *Fritsch, Vög. Eur.* tab. 42. fig. 3 (1870); *Elces & Buckley, Ibis*, 1870, p. 333 (Turkey); *Swinh. t. c.* p. 365 (Hainan); *Finsch & Hartl. Vög. Ostaf.* p. 678 (1870); *Godm. Azores*, p. 33 (1870); *Salvad. Faun. Ital., Ucc.* p. 239 (1871); *Swinh. P. Z. S.* 1871, p. 411 (throughout China, Formosa, & Hainan); *R. Gray, B. West Scotl.* p. 273 (1871); *Saunders, Ibis*, 1871, p. 390 (Seville, breeding); *Gray, Hand-l. B.* iii. p. 27, no. 10102 (1871); *Harting, Handb. Brit. B.* p. 55 (1872); *Gurney, in Anderss. B. Dam. Ld.* p. 284 (1872: Orange River; Walvisch Bay; Ondonga); *Godm. Ibis*, 1872, p. 221 (Teneriffe); *G. C. Taylor, t. c.* p. 232 (Constantinople; Ismid; Crete); *Shelley, B. Egypt*, p. 266 (1872); *Heugl. Orn. N.O.-Afr.* ii. Abth. i. p. 1053 (1873: Lower Egypt); *Hume & Henders. Lahore to Yark.* p. 295 (1873); *Hume, Nest & Eggs Ind. B.* p. 610 (1873); *id. Str. F.* i. p. 253 (1873: Sindh); *Adam, t. c.* p. 399 (Sambhur); *Brooke, Ibis*, 1873, p. 340 (Sardinia, breeding); *Hayes Lloyd, t. c.* p. 418 (Kathiawar); *Sarby, B. Shetl.* p. 183 (1874); *Buckley, Ibis*, 1874, p. 300 (Limpopo); *Ball, Str. F.* ii. p. 434 (1874: Chota Nagpur); *Stoliczka, t. c.* p. 463 (Leh); *Salvad. Ucc. Born.* p. 344 (1874: ? Borneo); *Hume, Str. F.* iii. p. 190 (1875: Thayetmyo); *Blyth, B. Burm.* p. 159 (1875); *Lilford, Ibis*, 1875, p. 15 (Catania); *Shelley, t. c.* p. 86 (Cape & Natal); *Swinhoe, t. c.* p. 132 (Chefoo); *Danford & Hartie-Brown, t. c.* p. 424 (Transylvania, breeding); *Dresser, B. Eur.* vi. p. 207, pl. 395 (1875); *Irby, B. Gibr.* p. 183 (1875); *Fallon, Ois. Belg.* p. 158 (1875); *Wharton, Ibis*, 1876,

p. 27 (Corsica); *Barratt, t. c. p. 210* (Orange Free State); *Dresser, t. c. p. 325*; *Swinh. t. c. p. 335* (Hakodadi); *Butler, Str. F. iv. p. 23* (1876: Mount Aboo); *Scully, t. c. p. 196* (Kashgar; Yarkand); *Fairbank, t. c. p. 263* (Deccan); *Hume, t. c. p. 465* (Laccadives); *Blanf. E. Persia, ii. p. 295* (1876: throughout Persia); *Ayres, Ibis, 1877, p. 340* (Transvaal); *David & Oust. Ois. Chine, p. 437* (1877: Pekin, breeding); *Reichen. J. f. O. 1877, p. 265*; *Hartl. Vog. Madagasc. p. 295* (1877: Amirante; Madagascar; Comoro Isl.); *Tacz. Bull. Soc. Zool. France, ii. p. 159* (1877: Poland); *Hume & Davison, Str. F. vi. p. 472* (1878: Pakchan; Thatone); *Hume, Str. F. vii. p. 67* (1878: Jodhpur); *Butler, t. c. p. 189* (E. Narra, breeding); *Ball, t. c. p. 230* (Ganges to Godavery); *Cripps, t. c. p. 307* (Faridpur); *Doig, t. c. p. 467* (Sindh); *Hume, t. c. p. 490* (Calcutta); *Prjev. in Rowley's Orn. Misc. iii. p. 48* (1878: Dalai-nor; Hoangho Valley, S.E. Mongolia; Kansu; Uasuri); *Danford, Ibis, 1878, p. 34* (Asia Minor); *Blakiston & Pryer, t. c. p. 223* (Tokio; Yezo); *Finsch, Verh. z.-b. Ges. Wien, xxix. p. 248* (1879: Sergiopol; Samarova, Central Ob); *Hume, Str. F. viii. p. 114* (1879); *Vidal, t. c. p. 173* (S. Konkan); *Doig, t. c. p. 371* (E. Narra, breeding); *Legge, B. Ceylon, p. 1127* (1879); *Butler, Cat. B. Sind etc. p. 68* (1879); *id. Cat. B. S. Bomb. Pres. p. 81* (1880); *Vidal, Str. F. ix. p. 88* (1880: S. Konkan); *Butler, t. c. p. 433* (Deccan; S. Mahratta Country); *Reid, Str. F. x. p. 74* (1881: Lucknow); *Borage, Orn. Angola, p. 439* (1881: Bengo; Duque de Bragança, Benguela; Rio Coroca; Quillengues & Humbe); *Biddulph, Ibis, 1881, p. 99* (Gilgit); *Scully, t. c. 591* (Gilgit); *Booth, Rough Notes, ii. pl. 50* (1881-87); *Swinh. Ibis, 1882, p. 123* (Candahar); *Seebohm, t. c. p. 224* (Astrakhan); *Milne-Edwards & Grandid. H. N. Madag., Ois. p. 544* (1882); *Hohub & Pelz. Beitr. Orn. Südaf. p. 261* (1882: from S. Coast up to Zambesi); *Butler, Feilden, & Reid, Zool. 1882, p. 343* (Newcastle, Natal); *Oates, Str. F. x. p. 243* (1882: Pegu); *Davidson, t. c. p. 323* (Khandeish); *Davison, t. c. p. 416* (Mysore); *Oates, Handb. Brit. Berm. ii. p. 243* (1883); *B. O. U. List Brit. B. p. 107* (1883); *Seebohm, Ibis, 1883, p. 81* (Caucasus); *Scovertz, t. c. pp. 72, 82* (Alichur, Pamir); *Irby, t. c. p. 186* (Santander); *Parker, t. c. p. 195* (Ceylon, migrant); *Seebohm, t. c. p. 398* (Dobrukscha, nesting); *Eagle Clarke, Ibis, 1884, p. 146* (Obedeka Bara, nesting; Dobanovci); *Seebohm, t. c. p. 268* (Kiukiang); *C. H. T. Marshall, t. c. p. 424* (Chamba); *Saunders, ed. Yarrell's Brit. B. iv. p. 162* (1884); *Seebohm, Hist. Brit. B. ii. p. 468* (1884); *Blakist. Amended List B. Japan, p. 12* (1884); *Tristr. Faun. & Flor. Palest. p. 109* (1884); *Murray, Vertebr. Faun. Sind, p. 269* (1884); *Radde, Orn. Omuc. pp. 42, 397* (1884: to 7000 feet breeding); *Baird, Brewer, & Ridgw. Water-Birds N. Amer. i. p. 19* (1884); *Coues, Key N. Amer. B. 2nd ed. p. 658* (1884); *Salvad. Ann. Mus. Genov. (2) i. p. 227* (1884: Lake Cialalaka, Shoa; Falls of Duleccia); *Sharpe, ed. Layard's B. S. Afr. p. 708* (1884); *Whitehead, Ibis, 1885, p. 43* (Corsica); *Swinh. & Barnes, t. c. p. 135* (Mhow distr.); *Reid, t. c. p. 250* (Marocco); *Zaroudn. Ois. Transc. p. 71* (1885); *Slater & Carter, Ibis, 1886, p. 49* (Iceland); *Sharpe, t. c. p. 490* (Fao); *Gigl. Arif. Ital. p. 275* (1886); *Salvad. Elenco Ucc. Ital. p. 241* (1886); *A. O. U. Check-l. N. Amer. B. p. 135* (1886); *Symonds, Ibis, 1887, p. 335* (Orange Free State); *Tait, t. c. p. 372* (Portugal); *Radde, Orn. iii. p. 497* (1887); *Oates, Ibis, 1888, p. 73* (Bhamo); *Reid,*

- t. c.* p. 78 (Teneriffe, ? breeding); *Guillem. t. c.* p. 110 (Larnaka, Cyprus); *Ramsay, Tab. List Austr. B.* p. 21 (1888: Richmond & Clarence Rivers; N. S. W.; Victoria); *Hume, Str. F.* xi. p. 332 (1888: Manipur); *St. John, Ibis*, 1889, p. 178 (S. Afghanistan); *Lilford, t. c.* p. 343 (Cyprus); *Eagle Clarke, t. c.* p. 550 (East Pyrenees); *Reichen. Syst. Verz. Vög. Deutschl.* p. 41 (1889); *Saunders, Man. Brit. B.* p. 335 (1889); *Seebohm, Ibis*, 1890, p. 404 (Co. Waterford); *Brusina, Motr. etc. (Orn. Croat.)* p. 72 (1890); *Seebohm, B. Japan. Emp.* p. 215 (1891: all islands); *Gätke, Vogelw. Helgol.* p. 409 (1891); *Madarász, Aust. Ungar. Vög.* p. 105 (1891); *Reiser, Vogels. Landesm. Sarajevo*, p. 110 (1891); *Friwaldsky, Av. Hung.* p. 127 (1891); *Turle, Ibis*, 1891, p. 7 (Blasket Is., breeding); *Evans, t. c.* p. 70; *Sharpe, t. c.* p. 112 (Fao); *Styan, t. c.* pp. 327, 491 (Lower Yangtse, breeding); *Sharpe, Rep. 2nd Yark. Miss., Aces*, p. 124 (1891: Wooller Lake, Cashmere; Baramula); *Seebohm, Ibis*, 1892, p. 22 (Heligoland); *Sibree, t. c.* p. 116 (Madagascar); *Campbell, t. c.* p. 244 (Corea); *De la Touche, t. c.* p. 487 (Foochow & Swatow); *Hartert, t. c.* p. 512 (E. Prussia); *Barnes, Ibis*, 1893, pp. 173, 181 (Aden); *Meade-Waldo, t. c.* p. 198 (Canaries, ? breeding); *Blagg, t. c.* p. 354 (Noss, Shetlands, breeding); *Styan, t. c.* p. 434 (Hainan); *Reichen. Vög. Deutsch-Ost-Afr.* p. 65 (1894: Kingani).
- Ardea major*, *Linn. Syst. Nat.* i. p. 236 (1766); *Gm. Syst. Nat.* i. p. 627 (1788); *Vieill. Nouv. Dict. d'Hist. Nat.* xiv. p. 400 (1817); *Rour, Orn. Prov.* pl. 311 (1825).
- Le Héron Commun*, *Buff. Hist. Nat. Ois.* vii. p. 342 (1781).
- Johanna Heron*, *Lath. Gen. Syn.* iii. pt. 1, p. 100 (1785).
- Ardea johannæ*, *Gm. Syst. Nat.* i. p. 629 (1788).
- Ardea shenana*, *Sander, Naturf.* xiii. p. 195 (1779); *Vieill. Nouv. Dict. d'Hist. Nat.* xiv. p. 415 (1817).
- Ardea vulgaris*, *Bechst. Orn. Taschenb.* p. 255 (1803).
- Ardea brag*, *Is. Geoffr. St.-Hil. in Jacquem. Voy.* iv. *Ois.* p. 85, pl. 8 (1844); *Bp. Consp. Av.* ii. p. 111 (1855); *Tacz. J. f. O.* 1874, p. 336; *id. Bull. Soc. Zool. France*, i. p. 258 (1876: Argun).
- Ardea leucophæa*, *Gould, P. Z. S.* 1848, p. 58.
- Ardea cinerea*, *Brehm, Vög. Deutschl.* p. 580 (1831).
- Ardea cinerea*, major, minor, etc., *A. E. Brehm, Verz. Samml. C. L. Brehm*, p. 12 (1866: teste Dresser).
- Ardea cinerea*, var. *brag*, *Severtz. Turkest. Jevotn.* p. 68 (1873: breeding).

*Adult in breeding-plumage.* General colour above light ashy grey, the scapular plumes, as well as the parapteral feathers and innermost secondaries, elongated, and forming narrow drooping plumes of pearly grey or white; the wing-coverts grey like the back, the outer ones pearly grey or white, the greater series dark ashy, the outer webs entirely white; bastard-wing, primary-coverts, and quills purplish black, the secondaries shaded with grey externally, the inner secondaries like the back; tail-feathers entirely grey; crown of head crested, white in the centre, with a broad band of purplish black on each side, ending in a crest on the occiput, and having two elongated nuchal plumes; entire sides of face, neck all round, and under surface of body white, with a creamy-lilac shade on each side of the fore-neck and chest, which have drooping plumes of narrow elongated white feathers; the whole of the lower throat

and fore-neck varied with elongated black stripes, differing in breadth and situated on one side of the feather; on each side of the crop is a large patch of drooping plumes of purplish black, and continued along the sides of the body even as far as the vent; sides of body light ashy grey; thighs and under tail-coverts white; under wing-coverts ashy grey: "bill yellow, with the ridge of the upper mandible brown towards the end; feet dull green; tibia yellow; claws black; iris yellow; bare space between the bill and the eye green" (*W. Macgillivray*). Total length 30 inches, culmen 5.1, wing 18, tail 7.2, tarsus 6.8.

*Adult female.* Similar to the male and equally beautifully coloured, but the black crest-plumes not so long, and the black markings on the chest not quite so pronounced. Total length about 30 inches, culmen 4.9, wing 17.8, tail 6.7, tarsus 6.4.

*Young.* Differs from the adult in being darker and not so pure grey; the head being dark slate-colour, with a small nuchal crest of purplish black, the neck rather lighter ashy; sides of face and ear-coverts also ashy grey; cheeks and throat white; the neck dark slaty grey, as also the sides of the body, under wing-coverts, and axillaries; lower throat, fore-neck, and chest very broadly streaked with black, the black very thickly developed on the throat, sparsely on the fore-neck, and represented by a few black streaks on the sides of the body; on each side of the chest the black patch of the adult is represented by a dusky patch of feathers, relieved by several broad white streaks; on the bend of the wing a tinge of rust colour, which also pervades the black-streaked feathers of the throat and fore-neck.

*Hab.* The greater part of Europe and Asia below lat. 60° N.; seldom found north of this line, but extending occasionally to Iceland and Greenland. Found also in most parts of Africa, Madagascar, and extending its range in the east to the Malay Islands and Australia.

|                                |                                                               |                               |
|--------------------------------|---------------------------------------------------------------|-------------------------------|
| <i>a.</i> Pull. sk.            | England.                                                      | Gould Coll.                   |
| <i>b.</i> Ad. sk.              | Cambridgeshire.                                               | Purchased.                    |
| <i>c.</i> Juv. sk.             | Oundle, Northants, March.                                     | Sharpe Coll.                  |
| <i>d.</i> ♂ ad. st.            | Kingsbury Reservoir ( <i>J. E. H.</i> ).                      | Harting Coll.                 |
| <i>e.</i> Juv. st.             | Romney Marsh, Kent, Sept.                                     | Dr. Gordon Hogg<br>[P.]       |
| <i>f, g.</i> Imm. sk.          | Romney Marsh, Sept., Jan.                                     | Sharpe Coll.                  |
| <i>h, i.</i> Juv. sk.          | Avington, Hants, Dec. ( <i>R. B. S.</i> ).                    | Sharpe Coll.                  |
| <i>k, l.</i> ♂ ad. et juv. sk. | Cookham, Berks, Dec. ( <i>R. B. S.</i> ).                     | Tweeddale Coll.               |
| <i>m.</i> Juv. sk.             | St. Michael's, Azores, April ( <i>F. D. G.</i> ).             | Salvin-Godman Coll.           |
| <i>n.</i> Ad. sk.              | Natal ( <i>T. Ayres</i> ).                                    | Gurney Coll.                  |
| <i>o.</i> Ad. sk.              | South Africa.                                                 | Sir A. Smith.                 |
| <i>p.</i> ♂ ad. sk.            | Kroonstad, Orange Free State, April ( <i>E. F. Symonds</i> ). | Gurney Coll.                  |
| <i>q.</i> Ad. sk.              | Fort Dauphin, Madagascar.                                     | W. Scott Elliot, Esq.<br>[P.] |



|                                   |                                                              |                                 |
|-----------------------------------|--------------------------------------------------------------|---------------------------------|
| r. Ad. sk.                        | Egypt.                                                       | Hon. C. Berkeley<br>[P.].       |
| s, t. Juv. sk.                    | Marshes of Babylonia ( <i>Com-<br/>mander Jones</i> ).       | India Museum.                   |
| u, v. w. Ad. et<br>juv. sk.       | Fao, Persian Gulf, Jan.                                      | W. D. Cumming,<br>Esq. [P.].    |
| x. ♀ ad. sk.                      | Gwader, Mekran Coast, Feb.<br>19 ( <i>O. A. H.</i> ).        | Hume Coll.                      |
| y, z, a'. ♂ ad. sk.               | Candahar, Dec., Jan., Feb.                                   | Colonel Swinhoe<br>[P.].        |
| δ'. Ad. sk.                       | Quetta, Oct. 22 ( <i>Capt. Charles</i> ).                    | Hume Coll.                      |
| ε'. Imm. sk.                      | Larkhana, Sind ( <i>Dr. Gould</i> ).                         | India Museum.                   |
| δ'. ♂ ad. sk.                     | Sukkur, Sind, Dec. 31 ( <i>A.<br/>O. H.</i> ).               | Hume Coll.                      |
| ε'. ♀ ad. sk.                     | Sambhur, May 16 ( <i>R. M.<br/>Adam</i> ).                   | Hume Coll.                      |
| f'. ♂ ad. sk.                     | Jodhpur, Feb. 8 ( <i>A. O. H.</i> ).                         | Hume Coll.                      |
| g'. ♂ ad. sk.                     | Burr, 49 miles from Ajmere,<br>Jan. 9 ( <i>A. O. H.</i> ).   | Hume Coll.                      |
| h'-k'. ♂ ad. et<br>juv. sk.       | Gurgaon Distr., Aug., Sept.,<br>Dec. ( <i>W. N. Chill</i> ). | Hume Coll.                      |
| l. Ad. sk.                        | Sirza, Punjab, Nov. 28 ( <i>A.<br/>O. H.</i> ).              | Hume Coll.                      |
| m'. Juv. sk.                      | Seistan.                                                     | Hume Coll.                      |
| n', o'. ♂ ♀ juv.                  | Gilgit, May, Oct.                                            | Colonel Biddulph<br>[C.].       |
| p'. Ad. sk.                       | Dehra Dhoon.                                                 | Hume Coll.                      |
| q'. Ad. sk.                       | Etawah, Dec. 28.                                             | Hume Coll.                      |
| r'. Ad. sk.                       | Jhansie, April 28.                                           | Hume Coll.                      |
| s', t'. Ad. sk.                   | Oudh, Dec., Jan.                                             | Hume Coll.                      |
| u'. Ad. sk.                       | Mirzapur Distr., March ( <i>R.<br/>Thompson</i> ).           | Hume Coll.                      |
| v'. Ad. sk.                       | Khandeish.                                                   | Tweeddale Coll.                 |
| w'. Ad. sk.                       | Travancore.                                                  | F. Bourdillon [C.].             |
| x'. ♀ ad. sk.                     | Pegu, British Burma, Mar. 15.                                | Oates Coll.                     |
| y'. ♂ ad.; z'-b".<br>♂ ♀ juv. sk. | Thatone, Tenasserim, Nov.<br>11-19 ( <i>W. Davison</i> ).    | Hume Coll.                      |
| c". ♀ ad. sk.                     | Pakchan, Feb. 1 ( <i>W. Davison</i> ).                       | Hume Coll.                      |
| d'. ♂ ad.; e",<br>f". Pull. sk.   | Saigon, Cochin China, Nov.                                   | M. E. Pierre [P.].              |
| g'. Juv. sk.                      | Baram Fort, Sarawak.                                         | C. Cox, Esq. [P.].              |
| h". Ad. sk.                       | Hong Kong, China.                                            | Voy. of H.M.S.<br>'Challenger.' |
| i'. Ad. sk.                       | Amoy, Feb. ( <i>R. Swinhoe</i> ).                            | Seebohm Coll.                   |
| k". ♀ ad. sk.                     | Ningpo, March ( <i>R. S.</i> ).                              | Seebohm Coll.                   |
| l', m", n". Ad.<br>et juv. sk.    | Kiukiang, Oct. 1.                                            | F. W. Styan, Esq.<br>[P.].      |
| o". Ad. sk.                       | N.W. Formosa, April ( <i>R. S.</i> ).                        | Seebohm Coll.                   |
| p". ♂ juv. sk.                    | S. Yezo, Japan, Aug. ( <i>Capt.<br/>Blakiston</i> ).         | Seebohm Coll.                   |
| q". Juv. sk.                      | Yokohama ( <i>H. Pryer</i> ).                                | Seebohm Coll.                   |
| r". Ad. sk.                       | Corea.                                                       | C.W. Campbell, Esq.<br>[P.].    |
| s". Skeleton.                     | Scotland.                                                    | Mr. E. Gerrard [P.].            |
| t", u". Sterna.                   | England.                                                     | J. Ray, Esq. [P.].              |
| v", w". Sterna.                   | Europe.                                                      | M. Lefebvre.                    |
| x", y", z". Skulls.               | S. Germany.                                                  | Dr. Günther [C.].               |

8. *Ardea herodias* \*.

- The Ash-coloured Heron from North America, *Edwards, Nat. Hist. B.* iii. p. 135, pl. 135 (1740).  
 The Largest Crested Heron, *Catesby, Nat. Hist. Carol. App.* pl. 10. fig. 1 (1743).  
 Le Héron de la Baye de Hudson, *Brisson, Orn.* v. p. 407 (1760); *Buff. Hist. Nat. Ois.* vii. p. 386 (1760).  
 Le Héron hupé de Virginie, *Brisson, Orn.* v. p. 416 (1760).  
*Ardea herodias*, *Linn. Syst. Nat.* i. p. 237 (1766); *Gm. Syst. Nat.* i. p. 630 (1788); *Wilson, Amer. Orn.* viii. p. 28, pl. 66. fig. 2 (1814); *Fenn. Man. d'Orn.* ii. p. 606 (1820); *Audub. B. Amer.* pl. cxxi. (c. 1826); *Wagl. Syst. Av.* p. 178 (1827); *Suwayna & Richards. Faun. Bor.-Amer., Birds*, p. 373 (1831); *Audub. Orn. Biogr.* iii. p. 87 (1835); *id. op. cit.* v. p. 509 (1839); *id. B. Amer.* 8vo, vi. p. 122, pl. cccxix. (1839); *d'Orbigny in Ramon de la Sagra, Hist. Nat. Ois.* p. 199 (1839); *Gould, in Darwin's Voy. 'Beagle,' Birds*,

\* I have been unable to speak decidedly in reference to '*Ardea wurdemanni*' and '*A. wardi*', for lack of material. The following is the synonymy of the two supposed species:—

*ARDEA WURDEMANNI.*

- Ardea wurdemanni*, *Baird, B. N. Amer.* p. 609 (1858), pl. 86 (1860); *Coues, Key N. Amer. B.* p. 207 (1872); *Maynard, B. East. N. Amer.* p. 407 (1879); *Cory, Auk*, iii. p. 408 (1886: S.W. Florida), iv. p. 169 (1887: Cape Sable); *Ridgw. Man. N. Amer. B.* p. 128 (1887); *Scott, Auk*, vi. p. 16 (1889: Cape Romano and Cape Sable), ix. p. 211 (1892).  
*Ardea occidentalis*, part., *Baird, Brewer, & Ridgw. Water-B. N. Amer.* p. 6 (1884); *Coues, Key N. Amer. B.* 2nd ed. p. 658 (1884).

According to Mr. Ridgway (*Man.* p. 128), the adult has the "head entirely white, the forehead streaked with blackish." In the young, "the forehead and crown are dull slate-colour, narrowly streaked with white, the feathers of the occiput white, with dusky tips; wing-coverts spotted with rusty, the lower and more posterior with large wedge-shaped white spots." Length about 50 inches, wing 20-21, culmen 5-6-5, tarsus 7-8-5.

*Hab.* Florida Keys and Cape Florida. Accidental in Illinois.

Specimens sent by Mr. W. E. D. Scott to Messrs. Salvin and Godman, as *A. wurdemanni*, appear to me to be absolutely identical with *A. herodias*. Mr. Ridgway says that in the latter bird the lower parts are "black or dusky, broadly striped with white (the two colours in nearly equal proportion in young), and the tarsus does not exceed 8 inches; legs and feet black in adult." In *A. wurdemanni* the lower parts are "white, narrowly striped or streaked with black, the tarsus is more than 8-5 inches, and the legs and feet are olive in adult."

*ARDEA WARDI.*

- Ardea wardi*, *Ridgw. Bull. Nutt. Orn. Club*, vii. p. 5 (1882: S.E. Florida); *Baird, Brewer, & Ridgway, Water-B. N. Amer.* i. p. 10 (1884); *Ward, Auk*, i. p. 161 (1884: Ectero Bay, &c.); *Coues, Key N. Amer. B.* 2nd ed. p. 658, note (1884); *A. O. U. Check-l. N. Amer. B.* p. 135 (1886); *Ridgw. Man. N. Amer. B.* p. 129 (1887); *Scott, Auk*, v. p. 183 (1888: Tarpon Springs), vi. p. 17 (1889: Gulf coast of Florida), vii. p. 306 (Bird Key, Dry Tortugas); *Brewster & Chapm. Auk*, v. pp. 135, 137 (1891: Suwanee River); *Scott, Auk*, ix. p. 211 (1892).

"Adult with occiput and sides of crown black, as in *A. herodias*, the forehead and middle of crown pure white. Length 48-54 inches, culmen 6-5-7, wing 2-2-5, tarsus 8-5-9."

*Hab.* Western Florida.



p. 128 (1841: Galapagos); *Gray, List Grall. Brit. Mus.* p. 75 (1844); *id. Gen. B.* iii. p. 555 (1847); *Gosse, B. Jamaica*, p. 346 (1847); *Bp. Consp. Av.* ii. p. 112 (1855); *Baird, B. N. Amer.* p. 668 (1858); *Bryant, Proc. Bost. Soc. N. H.* vii. p. 120 (1859: Bahamas); *Brewer, t. c.* p. 308 (Cuba); *Scl. & Salv. Ibis*, 1859, p. 226 (Dueñas); *A. & E. Newton, t. c.* p. 263 (St. Croix); *G. C. Taylor, Ibis*, 1861, p. 129 (Florida); *Scl. P. Z. S.* 1861, p. 81 (Jamaica); *Schl. Mus. Pays-Bas, Ardeæ*, p. 4 (1863); *Blakist. Ibis*, 1863, p. 129 (Minnesota); *March, Proc. Philad. Acad.* 1864, p. 63 (Jamaica); *Salvin, Ibis*, 1865, p. 193 (Guatemala); *Léot. Ois. Trinidad*, p. 404 (1866); *Dresser, Ibis*, 1866, p. 31 (S. Texas); *Coues, t. c.* p. 263 (Arizona); *Lawr. Ann. Lyc. N. Y.* viii. p. 98 (1866: Sombrero); *Baird, Ibis*, 1867, p. 287 (Bermuda); *Brown, Ibis*, 1868, p. 429 (Vancouver Isl.); *Sundev. Öfv. K. Vet.-Akad. Förh. Stockh.* 1869, p. 589 (St. Bartholomew); *Lawr. Ann. Lyc. N. Y.* ix. p. 210 (1869: Yucatan); *Allen, Mem. Bost. Soc.* i. p. 501 (1869: Western Iowa); *Dall & Bann. Tr. Chicago Acad.* i. p. 289 (1869: Sitka); *Scl. & Salv. P. Z. S.* 1870, p. 323 (Indefatigable Isl., Galapagos); *Gray, Hand-l. B.* iii. p. 27, no. 10104 (1871); *Allen, Bull. Mus. C. Z.* ii. p. 358 (1871: E. Florida); *Coues, Proc. Philad. Acad.* 1871, p. 33 (Fort Macon, N. Carol.); *Allen, Bull. Mus. C. Z.* iii. pp. 172, 182 (Eastern Kansas; Great Salt Lake Valley); *Coues, Key N. Amer. B.* p. 267 (1872); *Scl. & Salv. P. Z. S.* 1873, p. 511 (Venezuela); *id. Nomencl. Av. Neotr.* p. 125 (1873); *Coues, B. N.-West*, p. 517 (1874); *Ridgw. Ann. Lyc. N. Y.* x. p. 387 (1874: Illinois); *Hensh. Rep. Zool. 100th Merid.* p. 464 (1875: Camp Lowell, Arizona); *Sennett, Bull. U.S. Geol. Survey*, iv. p. 58 (1878: Corpus Christi); *Ridgw. t. c.* p. 237; *Coues, t. c.* p. 648 (Red River); *Merrill, Proc. U.S. Nat. Mus.* i. p. 164 (1878: Texas, breeding); *Lawr. t. c.* p. 196 (St. Vincent), p. 236 (Antigua), p. 240 (Barbuda), p. 274 (Grenada), p. 359 (Martinique); *Belding, t. c.* p. 391 (Murphy's), p. 443 (San Joaquim, breeding); *Lawr. t. c.* p. 451 (Guadeloupe); *Scl. P. Z. S.* 1879, p. 765 (Montserrat); *Maynard, B. East. N. Amer.* p. 405 (1879); *Cooper, Proc. U.S. Nat. Mus.* ii. p. 251 (1879: San Diego, breeding); *Ridgw. Proc. U.S. Nat. Mus.* iii. p. 197 (1880); *Cory, B. Bahamas*, p. 166 (1880); *A. & E. Newton, Handb. Jamaica*, p. 111 (1881); *Coues, Check-l. N. Amer. B.* p. 106 (1882); *Brewst. Bull. Nutt. Orn. Club*, viii. p. 36 (1883: Tucson); *Bailey, t. c.* p. 42 (Georgia, breeding); *Nutting, Pr. U.S. Nat. Mus.* vi. p. 379 (1883: Nicaragua); *Coues, Key N. Amer. B.* 2nd ed. p. 657 (1884); *Ridgw. Pr. U.S. Nat. Mus.* vii. p. 177 (1884: Curaçoa); *Baird, Brewer, & Ridgw. Water-Birds N. Amer. B.* i. p. 13 (1884); *Turner, Pr. U.S. Nat. Mus.* viii. p. 245 (1885: near Fort Chimo; Moose Factory); *Drew, Auk*, ii. p. 17 (1885: Colorado, 5000 ft., breeding); *Beckham, t. c.* p. 143 (Puebla, Colorado); *Loomis, t. c.* p. 190 (S. Carolina); *Agersborg, t. c.* p. 287 (S.E. Dakota); *Evermann, Auk*, iii. pp. 91, 197 (1886: Ventura Co., Cal.); *Seton, t. c.* p. 150 (Manitoba); *Anthony, t. c.* p. 160 (Washington Co., Oregon); *Scott, t. c.* p. 385 (Arizona); *A. O. U. Check-list N. Amer. B.* p. 135 (1886); *Wells, Pr. U.S. Nat. Mus.* ix. p. 626 (1886: Grenada); *Turner, Contr. Nat. Hist. Alaska*, p. 188 (1886); *Dwight, Auk*, iv. p. 16 (1887: Cape Breton Isl.); *Scott, t. c.* p. 136 (S. Florida); *Towns. Pr. U.S. Nat. Mus.* x. pp. 196, 294 (1887: California); *Shufeldt, t. c.* p. 326 (S.E. Alaska, July); *Beckham, t. c.* p. 636 (Bexar County), p. 649 (Nueces Bay, breeding); *Lloyd, Auk*, iv. p. 185 (W. Texas); *Cory, t. c.* p. 323 (throughout the

- West Indies); *Ridgw. Man. N. Amer. B.* p. 129 (1887); *Nelson, Nat. Hist. Coll. Alaska*, p. 94 (1887); *Merrill, Auk*, v. p. 143 (1888: Fort Klamath); *Chapm. t. c.* p. 269 (Gainesville, Florida); *Evermann, t. c.* p. 347 (Indiana); *Feilden, Ibis*, 1889, p. 496 (Barbados); *Shufeldt, Journ. Comp. Med. & Surg.*, July 1889; *F. H. Allen, Auk*, vi. pp. 76, 78 (1889: New Hampshire); *Hasbrouck, t. c.* p. 236 (Brown Co., Texas); *Pindar, t. c.* p. 312 (Kentucky); *Cory, B. West Ind.* p. 244 (1889); *Ridgw. Pr. U.S. Nat. Mus.* xii. pp. 114, 120 (1889: Duncan Isl., Galapagos); *Loomis, Auk*, vii. p. 35 (1890: S. Carolina); *Cherrie, t. c.* p. 332 (Costa Rica); *Mortimer, t. c.* p. 337 (Florida); *Northrop, Auk*, viii. p. 77 (1891: Andros Isl.); *F. H. Allen, t. c.* p. 165 (Cape Breton); *Cory, t. c.* p. 294 (New Providence), p. 295 (Berry Isl.), p. 296 (Bimini Isl.), p. 297 (Inagua); *Palmer, Pr. U.S. Nat. Mus.* xiii. p. 259 (1891: Percé Rock, Canada); *Thompson, t. c.* p. 489 (Manitoba); *Scott, Auk*, ix. p. 9 (1892: Jamaica); *Laur. t. c.* p. 43 (Gray's Harbour); *Attwater, t. c.* p. 232 (S. Antonio, Texas); *Cherrie, t. c.* p. 329 (San José, Costa Rica); *Cory, Cat. B. West Ind.* p. 80 (1892); *Dwight, Auk*, x. p. 8 (1893: Prince Edward Isl., breeding); *White, t. c.* p. 223 (Mackinac Isl.); *Hartert, Ibis*, 1893, pp. 311, 325 (Curaçoa).
- Ardea hudsonius*, *Linn. Syst. Nat.* i. p. 238 (1766: ex *Edwards*); *Gm Syst. Nat.* i. p. 632 (1788); *Temm. Man. d'Orn.* ii. p. 596 (1820).
- Le Grand Héron d'Amérique, *Buff. Hist. Nat. Ois.* vii. p. 365 (1780).
- Great Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 85 (1785); *Nutt. Man. Orn. N. Amer. B.* ii. p. 42 (1834).
- Red-shouldered Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 42 (1834).

**Adult male.** General colour above slaty blue, the scapulars and innermost secondaries with elongated plumes of lighter grey, shading off into ashy or hoary white towards their ends; the lower back and rump rather lighter than the rest of the back; upper tail-coverts and tail-feathers slaty grey; wing-coverts like the back, the greater series dusky on the inner webs and slaty grey on the outer; the inner secondaries slaty grey like the back; bastard-wing, primary-coverts, and quills black, externally dusted with slate-colour; head much crested; forehead, crown, and eyebrow white, with a broad black band running from just before the eye along the sides of the crown and meeting on the nape, where it is produced into a long pointed crest; sides of face white, like the cheeks and throat; neck dusky vinaceous brown, the lower throat and fore-neck minutely streaked with black and white, the feathers of the fore-neck elongated, of a dull ashy colour, becoming white towards the ends, the middle feathers white, broadly streaked with black, the feathers being margined with black or grey; sides of breast with a large patch of black drooping feathers having broad white centres, with an inner shoulder-patch of white feathers tinged with cinnamon; remainder of under surface of body white, with black marginal markings, producing a striped appearance; under tail-coverts pure white; on each side of the abdomen a broad line of black, some of the feathers streaked with white and some white on the outer web; sides of the body, axillaries, and under wing-coverts slaty blue; edge of wing cinnamon-coloured; thighs

vinous cinnamon: 'upper mandible black, paler or horn-coloured on the tomium; lower mandible pale sea-green, deepening into clear horn-yellow on the terminal half; eyelids and horizontal space on lores light apple-green; tibiæ and soles of toes apple-green; rest of legs and feet black; iris gamboge-yellow" (*Ridgway*). Total length about 40 inches, culmen 5·5, wing 18·5, tail 7·2, tarsus 6·1.

*Young.* Differs from the adult in having a slaty-black head, with a little white loreal streak, all the wing-coverts edged with rusty, and with a tinge of rusty on the ear-coverts, and mixed with the black and white feathers on the front of the neck; the fore-neck and under surface of the body broadly streaked with rufous; thighs very pale vinous.

It is evident that the adult plumage in this species is not fully assumed until the second year, for in the Museum there are specimens from British Columbia which have the elongated plumes of the adult, but still retain a considerable amount of brown on the forehead, have a fulvescent tint behind the eye, and the ear-coverts lighter slaty brown, while the black and white streaked feathers on the lower throat are strongly tinged with cinnamon.

Specimens from Florida, sent as *A. wurdemanni*, seem to me to be inseparable from *A. herodias*.

*Hab.* North America generally, south to Central America, the West Indies to Venezuela, U.S. Colombia, and the Galapagos.

|                       |                                                                                         |                                      |
|-----------------------|-----------------------------------------------------------------------------------------|--------------------------------------|
| a. Ad. st.            | North America.                                                                          | J. J. Audubon, Esq.<br>[P.]          |
| b. Imm. sk.           | N.W. America.                                                                           |                                      |
| c. ♂ ad. sk.          | Quatsimough Harbour, West coast of Vancouver Island, Sept.                              | Dr. Lyall [P.]                       |
| d. Ad. sk.            | Saturna Island.                                                                         | Dr. Lyall [P.]                       |
| e, f, g. Juv. sk.     | Fraser River, British Columbia.                                                         | J. K. Lord, Esq. [P.]                |
| h. Juv. sk.           | 49th Parallel ( <i>G. Dawson</i> ).                                                     | North Amer. Boundary Commission [P.] |
| i. Juv. sk.           | Big Moose Lake, Hamilton Co., New York, July 23 ( <i>C. H. Merriam: Hensh. Coll.</i> ). | Salvin-Godman Coll.                  |
| k. Imm. sk.           | Locust Grove, N. Y., Aug. 6 ( <i>C. H. Merriam: Hensh. Coll.</i> ).                     | Salvin-Godman Coll.                  |
| l. ♀ juv. sk.         | Lyon's Falls, N. Y., Aug. 18 ( <i>A. J. Dayan: Hensh. Coll.</i> ).                      | Salvin-Godman Coll.                  |
| m, n. Ad. et imm. sk. | Adirondack Mts., N. Y. ( <i>C. H. Merriam: Hensh. Coll.</i> ).                          | Salvin-Godman Coll.                  |
| o. ♂ ad. sk.          | Cyprus Swamp, Knox Co., Indiana, April ( <i>R. Ridgway: Hensh. Coll.</i> ).             | Salvin-Godman Coll.                  |
| p. Ad. sk.            | Halifax, Nova Scotia.                                                                   | Capt. Savile Reid [C.]               |
| q. Juv. sk.           | Bermuda, Nov.                                                                           | Capt. Savile Reid [C.]               |
| r. Ad. sk.            | Florida.                                                                                | Salvin-Godman Coll                   |

|                                                                                 |                                                                          |                          |
|---------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------|
| s-o'. ♂ ad. et juv.; o'-o'. ♀ ad. et juv.; p', q'. ♂ pull. sk. r'-v'. ♂ ad. sk. | Tarpon Springs, Florida, Feb. to May and Nov. ( <i>W. E. D. Scott</i> ). | Salvin-Godman Coll.      |
| w'. Juv. sk.                                                                    | Corpus Christi, Texas, May ( <i>F. B. Armstrong</i> ).                   | Salvin-Godman Coll.      |
| x', y'. ♀ juv. sk.                                                              | Mexico.                                                                  | Purchased.               |
| s', o'. ♂ ♀ ad. sk.                                                             | Presidio, Mexico, Feb., April ( <i>A. Forrer</i> ).                      | Salvin-Godman Coll.      |
| b'. Ad. sk.                                                                     | Bolaños, Jalisco, March 11 ( <i>W. B. Richardson</i> ).                  | Salvin-Godman Coll.      |
| c'. Juv. sk.                                                                    | Jalapa, Vera Cruz ( <i>Ferrari-Perez</i> ).                              | Salvin-Godman Coll.      |
| d'. Juv. sk.                                                                    | Dueñas, Guatemala, Oct. ( <i>O. Salvin</i> ).                            | Salvin-Godman Coll.      |
| e', f'. Juv. sk.                                                                | San Gerónimo, Vera Paz, Dec. ( <i>O. Salvin</i> ).                       | Salvin-Godman Coll.      |
| g'. ♀ imm. sk.                                                                  | San José, Costa Rica ( <i>A. von Franzius</i> ).                         | Salvin-Godman Coll.      |
| h'. Juv. sk.                                                                    | Port Lemon, Costa Rica.                                                  | Capt. W. H. Milner [P.]. |
| i'. imm. sk.                                                                    | Island of Montserrat, West Indies ( <i>Sturge</i> ).                     | Salvin-Godman Coll.      |
| k'. Juv. sk.                                                                    | S. Vincent, Jan. ( <i>D. W. Smith</i> ).                                 | Salvin-Godman Coll.      |
| l'. ♂ ad. sk.                                                                   | Merida, Venezuela, May 15 ( <i>A. Goering</i> ).                         | Salvin-Godman Coll.      |
| m', n'. ♀ ad. et imm. sk.                                                       | Indefatigable Island, Galapagos, Oct. 6 ( <i>Dr. Habel</i> ).            | Salvin-Godman Coll.      |
|                                                                                 | Indefatigable Island, Aug. 30.                                           | Dr. Habel [C.].          |

9. *Ardea occidentalis*.

*Ardea occidentalis*, *Audub. B. Amer.* pl. 281 (c. 1826); *id. Orn. Biogr.* iii. p. 542 (1839); *Bp. Comp. List B. Eur. & N. Amer.* p. 47 (1838); *Audub. Orn. Biogr.* v. p. 596 (1839); *id. B. Amer.* 8vo, vi. p. 110, pl. 368 (1843); *Gray, List Grall. Brit. Mus.* p. 75 (1844); *id. Gen. B.* iii. p. 555 (1847); *Lembeye, Av. Cuba*, p. 82 (1850); *March, Proc. Philad. Acad.* 1864, p. 63 (Jamaica); *Gray, Hand-l. B.* iii. p. 27, no. 10105; *Coues, Key N. Amer. B.* p. 125 (1872); *Scl. & Salv. Nomencl. Av. Neotr.* p. 125 (1873); *Maynard, B. East. N. Amer.* p. 408 (1879); *A. & E. Newton, Handb. Jamaica*, p. 111 (1881); *Coues, Check-l. N. Amer. B.* p. 106 (1882); *id. Key N. Amer. B.* 2nd ed. p. 568 (1884); *Baird, Brewer, & Ridgw. Water-Birds N. Amer.* i. p. 6 (1884); *Cory, List B. West Ind.* p. 28 (1885); *A. O. U. Check-l. N. Amer. B.* p. 135 (1886); *Cory, Auk*, iii. p. 408 (1886), iv. p. 159 (1887: Porto Rico; Cuba; Jamaica); *Ridgw. Man. N. Amer. B.* p. 128 (1887); *Cory, B. West Ind.* p. 245 (1889); *Scott, Auk*, vi. p. 16 (1889), vii. p. 222 (1890: Florida); *Cory, Cat. B. West Ind.* p. 89 (1892); *Scott, Auk*, ix. p. 9 (1892: Jamaica), p. 211 (Florida); *Cory, t. c.* p. 272 (Cuba); *Allen, Auk*, x. p. 141 (1893: Valley of the Rio Grande).

*Audubonia occidentalis*, *Bp. Consp. Av.* ii. p. 113 (1855); *id. C. R.* xl. p. 422 (1855); *Cass. in Baird's B. N. Amer.* p. 670 (1858); *Gundl. Repert. Fisico-Nat. Cuba*, i. p. 348 (1866); *id. J. f. O.* 1874, p. 313 (Porto Rico); *id. Anal. Soc. Esp. Hist. Nat.* vii. p. 354 (1878: Porto Rico).

*Herodias occidentalis*, *Brewer, Proc. Bost. Soc. N. H.* vii. p. 308 (1860: Cuba, resident).

*Adult.* General colour above and below pure white, with elongated ornamental plumes on the fore-neck: "bill entirely yellow; feet and naked space in front of eyes greenish; iris yellow" (*C. J. Maynard*). Total length about 58 inches, culmen 6·2, wing 19, tail 7, tarsus 7·9.

*Young.* Pure white like the adults.

*Hab.* Southern Florida, chiefly on the eastern side (*Ridgway*). Greater Antilles.

|              |                                 |                           |
|--------------|---------------------------------|---------------------------|
| a. Ad. sk.   | Florida.                        | J. J. Audubon, Esq. [P.]. |
| b. Ad. sk.   | Florida.                        | The Duke of Sussex [P.].  |
| c. Juv. sk.  | Arsenica Key, Florida, Feb. 15. | Salvin-Godman Coll.       |
| d. Pull. sk. | Three Sister Keys, Florida,     | Salvin-Godman Coll.       |
|              | January 1883.                   |                           |

### 3. MESOPHOYX.

Type.

*Mesophoyx*, *Sharpe*, *Bull. Brit. Orn. Club*, iii.

p. xxviii (1894) ..... *M. intermedia*.

*Range.* Africa and India to China, and south to the Malayan Archipelago and Australia.

#### *Key to the Species.*

- a. Bare part of tibio-tarsus black in skin; bill black or yellow; bare face yellow ..... *intermedia*, p. 85.
- b. Bare part of tibio-tarsus yellow, contrasting with the black tarsus; bill always yellow \*.
- a'. With a completely yellow face, no blackish loreal patch ..... [p. 87.
- b'. With a distinct blackish loreal patch ..... *brachyrhyncha*, *plumifera*, p. 87.

#### 1. *Mesophoyx intermedia*.

*Ardea intermedia*, *Hasselt*, *MSS.* (*teste Schlegel*), *Wagler*, *Isis*, 1829, p. 659 (Java †); *Layard*, *Ann. & Mag. Nat. Hist.* xiv. p. 111 (1854); *Schl. Mus. Pays-Bas*, *Ardeæ*, p. 19 (1863: part.); *Hume*, *Nests & Eggs Ind. B.* p. 615 (1875); *Reichen. J. f. O.* 1877, p. 273 (pt.); *Dresser*, *B. Eur.* vi. p. 238, note (1880); *Seeb. B. Japan. Emp.* p. 217 (1890).

*Ardea melanopus*, *Wagler*, *Isis*, 1829, p. 659 (Java).

*Ardea putea*, *Frankl. P. Z. S.* 1831-32, p. 123.

*Ardea nivea*, *Cuv. Mus. Paris*; *Less. Traité*, p. 575 (1831); *Pucher. Rev. et Mag. de Zool.* 1851, p. 376; *Hartl. J. f. O.* 1855, p. 421.

*Ardea nigrirostris*, *J. E. Gray*, *Zool. Misc.* p. 19 (1831); *id. in Hardw. Ill. Ind. Zool.* pl. 49. fig. 2 (1832).

*Ardea egrettoidea* (*nec Gm.*), *Temm. Man. Orn.* iv. p. 314 (1840; Sicily!); *Werner, Atlas, Gralles*, pl. 6; *Gray, Gen. B.* iii. p. 555 (1847).

*Herodias intermedia*, *Blyth, Cat. B. Mus. As. Soc. Beng.* p. 279

\* This seems to be a perfectly constant character, and is accompanied by the dorsal train in both the African and Australian birds. The Indian bird seems to have the bill dark in summer and yellow in winter.

† I have taken it for granted that the Celebean bird will turn out the same as the Australian. The birds from Java and the Philippines are the same as the species from India and China. It has been difficult to locate all the synonyms.

(1849); *Swinh. Ibis*, 1861, p. 344; *id. P. Z. S.* 1868, p. 319, 1870, p. 427, 1871, p. 412; *Salvad. Ucc. Born.* p. 348 (1874); *Walden, Ibis*, 1874, p. 148 (Andamans); *Tweedd. Trans. Z. S.* ix. p. 237 (1875); *David & Oust. Ois. Chine*, p. 440 (1877); *Blakist. & Pryer, Ibis*, 1878, p. 114 (1879); *Hume, Str. F.* viii. p. 114 (1879); *Legge, B. Ceylon*, p. 1141 (1880); *Wardlaw Ramsay, Orn. Works Tweedd.* p. 660 (1881); *Everett, Journ. Straits Br. As. Soc. Beng.* 1889, p. 189 (Sarawak; Taguso); *Whitehead, Ibis*, 1890, p. 60 (Palawan).

*Egretta egrettoides*, *Bp. Conspect. Av.* ii. p. 115 (1855).

*Egretta melanopus*, *Bp. t. c.* p. 116 (1855).

*Egretta nigrirostris*, *Bp. t. c.* p. 117 (1855).

*Egretta intermedia*, *Bp. t. c.* p. 116 (1855); *Blakist. & Pryer, Ibis*, 1878, p. 224 (Tokio; Yezo); *Seeb. Ibis*, 1879, p. 27.

*Herodias egrettoides*, *Swinh. Ibis*, 1861, p. 261; *Jerd. B. Ind.* iii. p. 745 (1864).

**Adult male in breeding-plumage.** Pure white above and below; the head crested, but having no drooping plumes; the long ornamental plumes of the back immensely developed, being 17 inches in length; the feathers on the fore-neck beautifully developed, 8 inches long, the webs entirely broken up; bare part of tibia entirely black like the tarsi and toes: "bill black; facial skin green; iris yellow; feet and toes black" (*E. W. Oates*). Total length about 26 inches, culmen 2.9, wing 12.5, tail 5.4, tarsus 4.5, middle toe and claw 3.9.

**Adult female.** Similar to the male, but the ornamental plumes not so much developed.

**Adults in winter plumage.** Pure white, but losing the ornamental plumes altogether: "bill yellow, with blackish tip" (*E. W. Oates*).

**Young.** Entirely like the adults in winter plumage; the texture of the plumage soft and downy, and devoid of ornamental plumes.

**Hab.** Indian Peninsula, extending east to China and Japan, and south to the Malayan Archipelago.

|                            |                                                           |                         |
|----------------------------|-----------------------------------------------------------|-------------------------|
| a, b, c. ♂ aestiv.;        | Gurgaon Distr., Aug. to Oct.                              | Hume Coll.              |
| d. Juv. sk.                | ( <i>W. N. Chell</i> ).                                   |                         |
| e, f. Aestiv. sk.          | Etawah.                                                   | Hume Coll.              |
| g, h. Aestiv. et hiem. sk. | Raipur.                                                   | Hume Coll.              |
| i. ♀ hiem. sk.             | Seoni.                                                    | Hume Coll.              |
| k. Hiem. sk.               | Deccan ( <i>Sykes</i> ).                                  | India Museum.           |
| l, m. Aestiv. sk.          | Oudh.                                                     | Pinwill Coll.           |
| n, o. ♂ aestiv. sk.        | Futtehgurh, June 25 ( <i>A. Anderson</i> ).               | Hume Coll.              |
| p. Hiem. sk.               | Darjeeling Terai, Jan. ( <i>L. Mandelli</i> ).            | Hume Coll.              |
| q. Hiem. sk.               | Dikusha, Cachar.                                          | Hume Coll.              |
| r. ♀ hiem. sk.             | Pegu, Aug. 29 ( <i>E. W. Oates</i> ).                     | Oates Coll.             |
| s, t. Hiem. sk.            | Penang ( <i>Dr. Cantor</i> ).                             | India Museum.           |
| u. ♂ hiem. sk.             | S. Andamans, Feb. 28 ( <i>R. G. W. R.</i> ).              | Tweeddale Coll.         |
| v, w. ♂ ♀ hiem. sk.        | S. Andamans, April, May ( <i>R. J. Wimberley</i> ).       | Hume & Tweeddale Colls. |
| x, y. ♂ hiem. sk.          | Aberdeen, S. Andamans, April, Dec. ( <i>W. Davison</i> ). | Hume Coll.              |

|                                               |                                                            |                             |
|-----------------------------------------------|------------------------------------------------------------|-----------------------------|
| <i>a.</i> ♂ hiem. sk.                         | Java ( <i>Diard</i> ).                                     | Salvin-Godman Coll.         |
| <i>a'</i> . Æstiv. ; <i>b'</i> .<br>Hiem. sk. | Java.                                                      | Gould Coll.                 |
| <i>c.</i> ♂ hiem. sk.                         | Zamboanga, Mindanao, March<br>( <i>A. H. Everett</i> ).    | Tweeddale Coll.             |
| <i>d.</i> Ad. sk.                             | Japan.                                                     | Seeböhm Coll.               |
| <i>e.</i> Æstiv. sk.                          | Nagasaki, Japan, April 26.                                 | F. Ringer, Esq. [P.].       |
| <i>f-i.</i> Ad. et juv.<br>sk.                | Yokohama ( <i>H. Pryer</i> : <i>E.</i><br><i>Henson</i> ). | Seeböhm Coll.               |
| <i>k.</i> Æstiv. sk.                          | Hamilton Island, Corea.                                    | A. G. Wildey, Esq.<br>[P.]. |
| <i>l.</i> ♂ ad. sk.                           | Canton, April ( <i>R. Swinhoe</i> ).                       | Seeböhm Coll.               |
| <i>m.</i> ♀ ad. sk.                           | Hongkong, April ( <i>R. S.</i> ).                          | Seeböhm Coll.               |
| <i>o.</i> Ad. sk.                             | Formosa ( <i>R. S.</i> ).                                  | Seeböhm Coll.               |
| <i>p.</i> Æstiv. sk.                          | Canton.                                                    | Tweeddale Coll.             |
| <i>q.</i> Juv. sk.                            | Hankow, winter ( <i>R. S.</i> ).                           | Seeböhm Coll.               |
| <i>r.</i> Hiem. sk.                           | Cochin China.                                              | M. E. Pierre [P.].          |

## 2. *Mesophoyx brachyrhyncha*.

*Egretta flavirostris* (*nec Temm.*), *Bp. Consp. Av.* ii. p. 116 (1855).  
*Ardea intermedia*, *Finsch u. Hartl. Vög. Ostaf.* iii. p. 615 (1870);  
*Heugl. Orn. N.O.-Afr.* ii. Abth. i. p. 1065 (1873: Kordofan;  
 Lower White Nile; Blue Nile).  
*Herodias brachyrhynchos*, *Brehm, J. f. O.* 1858, p. 471.  
*Ardea egretta* (*nec Gm.*), *Layard, B. S. Afr.* p. 308 (1867: Zeekoe  
 Vley).

*Adult male in breeding-plumage.* Similar to *M. intermedia*, but with the bare part of the tibiæ yellow, contrasting with the black tarsus and toes; bill entirely yellow, with a black patch in front of the eye (in skin): "bill orange-yellow, darker at the tip of the upper mandible, the lower mandible and the lores greenish yellow; orbits, lores, and iris yellow; feet black, the tibia yellowish" (*Heuglin*). Total length about 25 inches, culmen 3, wing 12·5, tail 3·5, tarsus 4·25, middle toe and claw 3·9, ornamental plumes of back 17.

*Hab.* South Africa, extending to N.E. Africa.

|                   |                                                                   |                       |
|-------------------|-------------------------------------------------------------------|-----------------------|
| <i>a.</i> Ad. sk. | South Africa.                                                     | South-African Museum. |
| <i>b.</i> Ad. sk. | Kroonstadt, Orange Free State,<br>March ( <i>E. F. Symonds</i> ). | Gurney Coll.          |
| <i>c.</i> Ad. st. | Africa.                                                           | Massena Coll.         |

## 3. *Mesophoyx plumifera*.

*Herodias plumiferus*, *Gould, P. Z. S.* 1847, p. 221 (N. S. W.); *id.*  
*B. Austr.* vi. pl. 57 (1848); *Macgill. Voy. Rattlesn.* ii. p. 358  
 (1852: Torres Straits); *Rosenb. Reis naar Zuidoostereil.* p. 53  
 (1867).  
*Egretta plumifera*, *Bp. Consp. Av.* ii. p. 115 (1855); *Rosenb. J. f. O.*  
 1864, p. 136.  
*Ardea plumifera*, *Gray, P. Z. S.* 1858, p. 197; *id. Cat. B. New*  
*Guin.* p. 62 (1859).  
*Herodias egrettoides* (*nec Gm.*), *Gould, Handb. B. Austr.* ii. p. 393  
 (1865); *Ramsay, P. Z. S.* 1877, p. 341.



*Ardea intermedia* (*nec Wagl.*), *Finsch, Neu-Guinea*, p. 183 (1865); *Schl. N. T. Dierk.* iii. p. 348 (1860: Aru Isl.; Little Kei); *Rosenb. Malay. Arch.* pp. 220, 278 (Celebes), p. 373 (Aru Isl.; Kei Isl.), p. 696 (Salawati), p. 563 (New Guinea).  
*Herodias intermedia* (*nec Wagl.*), *Ramsay, Proc. Linn. Soc. N. S. W.* ii. p. 139 (1877); *Salvad. Ann. Mus. Genov.* xiv. p. 667 (1879: Kei Isl.); *id. op. cit.* xviii. p. 333 (1882); *id. Orn. Papuanis, etc.* iii. p. 352 (1882: Ternate; Aru Isl.; Mafor); *Ramsay, Tab. List Austr. B.* p. 21 (1888).  
*Herodias melanopus* (*nec Wagl.*), *Ramsay, Proc. Linn. Soc. N. S. W.* ii. p. 199 (1877); *d'Alb. Ann. Mus. Genov.* x. p. 20 (1877); *id. & Salvad. op. cit.* xiv. p. 146 (1879).

*Adult male in breeding-plumage.* Similar to *M. brachyrhyncha* from Africa, and having the bare part of the tibia yellow, the bill entirely yellow as well as the bare skin of the face: "bill and orbits yellow; feet and lower part of tarsi black; upper part of tarsi inclining to flesh-colour" (*J. Gould*). Total length 25 inches, culmen 3.1, wing 11, tail 5.4, tarsus 4.05, middle toe and claw 3.7.  
*Hab.* Australia, New Guinea, and the Moluccas, probably as far as Celebes.

|                      |                  |                     |
|----------------------|------------------|---------------------|
| <i>a.</i> Ad. st.    | New South Wales. | Australian Museum.  |
| <i>b, c.</i> Ad. sk. | Queensland.      | Salvin-Godman Coll. |
| <i>d.</i> ♂ ad. sk.  | Ceram.           | Wallace Coll.       |

4. HERODIAS.

|                                                         |                    |
|---------------------------------------------------------|--------------------|
|                                                         | Type.              |
| <i>Herodias, Boie, Isis</i> , 1822, p. 559 .....        | <i>H. egretta.</i> |
| <i>Egretta, Bp. Oss. Regno Anim.</i> p. 97 (1830) ..... | <i>H. egretta.</i> |
| <i>Casmerodius, Gloger, Handb.</i> p. 412 (1842).....   | <i>H. egretta.</i> |

*Range.* Nearly cosmopolitan.

Although the series of the Great White Egrets in the British Museum is a very large one, it does not contain a sufficient number of carefully sexed specimens to settle the question of the different races of these birds with any attempt at finality. The series of European birds is much too small to allow of definite conclusions, with regard to it and the Indian form; but it would appear, even from the small amount of material at command, that the European *H. alba* is much larger, and that this large form extends at least to Afghanistan, the tarsus measuring more than 7½ inches. It would appear also to visit India in winter, as Mr. Hume obtained a male in the Ajmere district in January which had a tarsus of 8.1 in., and Major Bingham procured a specimen at Delhi with a tarsus of the same length. At the same time it is extremely difficult to draw the line between this larger form and the smaller race, which appears to inhabit the tropics. Thus, on the same day that Mr. Hume procured a specimen with the tarsus 8.1 inches, he also shot another male in the same place with the tarsus only 6.35 inches; again, Major Bingham procured two females near Delhi, in June, which had the tarsus 5.25 and 6.7 respectively. We are confronted, therefore, with a difference in the length of the tarsus in these large Egrets of nearly three inches. A great deal of difference in the



length of the tarsus is probably due to the immaturity of the specimens, as it is extremely difficult to distinguish between young birds and adults in winter plumage; but it will be noticed that these differences in the length of the tarsus occur in perfectly adult birds in breeding-plumage, and, even allowing for a certain superiority in the size in the male, the difference in the length of the tarsus between the largest and smallest of the Indian birds must be admitted to be enormous. The following is a summary of the extreme measurements of the tarsus noted of the series in the British Museum:—

|                         | Summer plumage. |      | Winter plumage. |      |
|-------------------------|-----------------|------|-----------------|------|
|                         | in.             | in.  | in.             | in.  |
| Southern Europe to      |                 |      |                 |      |
| Afghanistan.....        | 7·75            | —8·2 |                 |      |
| Kashgar .....           | 6·8             | —7·8 |                 |      |
| Africa .....            | 5·4             | —6·8 | 5·55            | —6·8 |
| India .....             | 5·25            | —6·9 | 5·3             | —8·1 |
| Burmese Countries ..... | 5·5             | —6·4 | 5·65            | —6·3 |
| China and Japan.....    | 5·9             |      | 5·4             | —6·6 |
| Malay Archipelago ..... | 5·35            | —6·6 | 5·7             | —6·6 |
| Australia .....         | 5·2             | —6·0 | 5·5             | —6·0 |
| New Zealand .....       |                 |      | 5·2             | —6·4 |

It will be noticed, in the measurements given below in the list of specimens, that, on leaving out of consideration the extremely large birds with the tarsus over 8 inches, we find that no Indian bird has a tarsus of more than 7·5 inches. This certainly exceeds the length of the tarsus of the smaller birds from Kashgar, which are supposed to belong to the larger race. The bulk of Indian specimens, however, do not reach 7 inches in the length of the tarsus. Burmese, Australian, and New-Zealand birds apparently have 6·4 inches as the tarsal limit. As, therefore, there seems to be a perfect gradation in the length of the tarsus, which is shortest in Australian and New Zealand birds (5·2), and as much as 8·2 in Indian and European examples, it is difficult to found any worthy distinction on the tarsus; but the colour of the bill and tibia appears to me, as it did to Mr. Ridgway, to offer a character by which the different races can be distinguished. I have considered the African specimens of the Great White Egret to belong to the same race as the European and Indian bird, which has the bill black in summer and yellow in winter. The African specimens examined by me have all had yellow bills and black tibiae; but as none of them have been in full summer plumage, I must wait for further material before being able to decide that the African bird has a black bill in summer. From the remarks here given, and those which follow under the headings of the species themselves, it will be seen that the identification of the Great White Egrets requires a prolonged study.

Taking the breeding-plumage only, we have the following

*Key to the Species.*

- a. Bill black in summer, yellow in winter; tarsi and tibiae black in winter, the latter flesh-coloured in summer ..... *alba*, p. 90.

b. Bill yellow in summer and winter.

α'. Larger; with an immense train of decomposed feathers reaching far beyond the tail; tibiæ black like the toes ..... *egretta*, p. 95.

δ'. Train of decomposed feathers short, and scarcely reaching beyond the tail; tibiæ light-coloured; tarsi and toes dark ..... *timoriensis*, p. 98.

### 1. *Herodias alba*.

Le Héron blanc, *Brisson. Orn.* v. p. 428 (1760); *Daubenton. Pl. Enl.* viii. p. 886; *Buffon. Hist. Nat. Ois.* vii. p. 365 (1780).

*Ardea alba*, *Linn. Syst. Nat.* i. p. 239 (1766); *Gmelin. Syst. Nat.* i. p. 639 (1788); *Vieillot. N. Dict. d'Hist. Nat.* xiv. p. 414 (1817); *Pall. Zoogr. Rosso-Asiat.* ii. p. 120 (1826); *Gould, B. Eur.* iv. pl. 276 (1837); *Keys & Blas. Wirb. Eur.* p. lxxix (1480); *Selys-Longch. Faun. Belg.* p. 132 (1842); *Schl. Rev. Crit.* p. xcvi (1844); *Mühle, Beitr. Orn. Griechenl.* p. 112 (1844); *Hewitts. Eggs Brit. B.* ii. p. 274, pl. 75. fig. 1 (1846); *Gray, Gen. B.* iii. p. 555 (1847); *Schl. Vog. Nederl.* pl. 190 (1854); *Linderm. Vög. Griechenl.* p. 149 (1860); *Powys, Ibis*, 1860, p. 346 (Epirus); *Schl. Dier. Nederl. Vogels*, pl. 19. fig. 6 (1861); *Hartl. Faun. Madag.* p. 74 (1861); *Schl. Mus. Pays-Bas, Ardeæ*, p. 16 (1863); *Gray, List Brit. B.* p. 146 (1863); *Adams, Ibis*, 1864, p. 31 (Egypt); *Wright, t. c.* p. 143 (Malta); *Tristr. Ibis*, 1868, p. 325 (Palestine); *Schl. & Pollen, Faun. Madag., Ois.* p. 123 (1868); *Saunders, Ibis*, 1869, p. 181 (S. Spain); *Borggr. Vogelf. Norddeutschl.* p. 122 (1869); *Godman, Azores*, p. 34 (1870); *Elwes & Buckley, Ibis*, 1870, p. 333 (Macedonia); *Finsch & Hartl. Vög. Ostaf.* p. 686 (1870); *Gray, Hand-l. B.* iii. p. 27, no. 10108 (1871); *R. Gray, B. West Scott.* p. 277 (1871: Haddingtonshire); *Harting, Handb. Br. B.* p. 149 (1872); *G. C. Taylor, Ibis*, 1872, p. 232 (Island; Crete); *Heugl. Orn. N.O.-Afr.* ii. Abth. i. p. 1063 (1873: Tana Lake; Adowa; Lake Menzaleh; Blue and White Niles); *Severtz. Turkest. Jevotn.* p. 68 (1873); *Wald. Ibis*, 1874, p. 148 (Andamans); *Dresser & Blanford. t. c.* p. 336; *Buckley, t. c.* p. 390 (Limpopo); *Danf. & Harvie-Brown, Ibis*, 1875, p. 424 (Transylvania); *Dresser, Ibis*, 1876, p. 325; *Blanford. East. Pers.* ii. p. 295 (1876: Baluchistan); *Reichen. J. f. O.* 1877, p. 13 (Loango), p. 272 (crit.); *Hartl. Vög. Madag.* p. 298 (1877); *Finsch, Verhandl. z.-b. Ges. Wien*, xxix. p. 248 (1879: Lake Alakul, May); *Dresser, B. Eur.* vi. p. 231, pl. 398 (1880); *Milne-Edwards & Grandid. Hist. Nat. Madag., Ois.* ii. p. 548 (1882); *Holub & Pelz. Beitr. Orn. Südaf.* p. 273 (1882: Hart's River; Molapo River); *C. Swinhoe, Ibis*, 1882, p. 123 (Candahar); *B. O. U. List Brit. B.* p. 108 (1883); *Seebohm, Ibis*, 1883, p. 32 (Caucasus); *Eagle Clarke, Ibis*, 1884, p. 146 (Hungary); *Saunders, ed. Yarrell, Brit. B.* iv. p. 177 (1884); *Seebohm, Hist. Brit. B.* ii. p. 477, pl. 38 (1884); *Tristr. Faun. & Flor. Palest.* p. 110 (1884); *Ayres, Ibis*, 1885, p. 349 (Transvaal); *Emin, Scottish Geogr. Mag.*, June 1887, p. 276 (Albert Nyanza); *St. John, Ibis*, 1889, p. 178 (Candahar); *Lilford, t. c.* p. 343 (Cyprus); *Saunders, Man. Brit. B.* p. 359 (1889); *Sibree, Ibis*, 1892, p. 116 (Madagascar).

*Ardea egrettoides*, *S. G. Gmelin, Reis. Sibir.* ii. p. 193, Taf. 25 (1774); *Doderl. Avif. Sicil.* p. 211 (1869).

*Ardea garzetta major*, *Bodd. Tabl. Pl. Enl.* p. 55 (1783).

- The Great White Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 91 (1785); *Yarrell, Brit. B.* ii. p. 454 (1843).
- Ardea egretta*, *Bechst. Naturg. Deutschl.* iii. p. 41 (1793); *Meyer & Wolf, Taschenb.* p. 335 (1810); *Temm. Man. d'Orn.* p. 366 (1815); *Roux, Orn. Prov.* pl. 314 (1825); *Rüpp. Mus. Senckenb.* ii. p. 184 (1837); *Naum. Vög. Deutschl.* ix. p. 85, Taf. 222 (1838); *Temm. Man. d'Orn.* iv. p. 374 (1840); *Werner, Atlas, Gralles*, pl. 31; *Crespon, Orn. Gard*, p. 383 (1840); *Nordm. in Démid. Voy. Russ. Mérid.* iii. p. 259 (1840: Black Sea, March to Sept.); *Layard, B. S. Afr.* p. 308 (1867); *Hume, Nests & Eggs Ind. B.* p. 613 (1873); *Fallon, Ois. Bely.* p. 160 (1875: rare visitor).
- Herodias egretta*, *Boie, Isis*, 1822, p. 559; *Brehm, Vög. Deutschl.* p. 584, Taf. 30. fig. 4 (1831).
- Leptorodatis flavirostris*, *Ehrenb. Symb. Phys.* fol. m (1828).
- Ardea melanorhynchos*, *Wagl. Isis*, 1829, p. 659; *Hartl. Orn. West-Afr.* p. 221 (1857: Senegambia); *id. J. f. O.* 1861, p. 269.
- Ardea modesta*, *J. E. Gray, Zool. Misc.* p. 19 (1831); *id. in Hardw. Illustr. Ind. Zool.* ii. pl. 49. fig. 1 (1832).
- Ardea torra*, *Frankl. P. Z. S.* 1831, p. 123.
- Herodias candida*, *Brehm, Vög. Deutschl.* p. 584 (1831).
- Egretta alba*, *Bp. Faun. Ital. Ucc. Intr.* p. 14 (1832); *Suains. Classif. B.* ii. p. 354 (1837); *Bp. Comp. List B. Eur. & N. Amer.* p. 47 (1838); *Gray, Gen. B.* iii. p. 555 (1847); *Macgill. Br. B.* iv. p. 465 (1852); *Licht. Nomencl. Mus. Berol.* p. 89 (1854); *Heugl. Syst. Uebers.* p. 58 (1856); *Jaub. et Barth.-Lapomm. Rich. Orn.* p. 360 (1859: very rare); *Filippi, Viagg. Pers.* p. 351 (1865); *Degl. et Gerbe, Orn. Eur.* ii. p. 294 (1867); *Loche, Expl. Sci. Algér., Ois.* ii. p. 132 (1867); *Fritsch, Vög. Eur.* tab. 42. fig. 5 (1870); *Salvad. Faun. Ital. Ucc.* p. 240 (1871); *Tacz. Bull. Soc. Zool. France*, ii. p. 159 (1877: Poland); *Bogd. Consp. Av.* p. 111 (1884, pt.); *Gigl. Avif. Ital.* p. 278 (1886); *id. ibid. 1st Resoc.* p. 433 (1889), *2nd Resoc.* p. 560 (1890), *3rd Resoc.* p. 511 (1891).
- Egretta orientalis*, *Bp. Faun. Ital. Ucc. Intr.* p. 14 (1832); *Heugl. Syst. Uebers.* p. 58 (1856).
- Egretta nigrirostris* (*nec Gray*), *Bp. Comp. List B. Eur. & N. Amer.* p. 47 (1838); *Macgill. Brit. B.* iv. p. 460 (1852).
- Erodus victoriæ*, *Macgill. Man. Brit. B.* ii. p. 131 (1842).
- Erodus albus*, *Macgill. Man. Brit. B.* ii. p. 134 (1842).
- Herodias alba*, *Gray, List Grallæ Brit. Mus.* p. 77 (1844: Nepal); *Blyth, Cat. B. Mus. As. Soc.* p. 279 (1849: Calcutta); *Hartl. J. f. O.* 1854, p. 159; *Tristr. Ibis*, 1860, p. 77 (Algeria); *Irby, Ibis*, 1861, p. 245 (Oudh); *Jerd. B. Ind.* iii. p. 744 (1864, pt.); *Blyth, Ibis*, 1865, p. 37; *Beavan, Ibis*, 1868, p. 397 (Lower Bengal); *Doderl. Avif. Sicil.* p. 211 (1869); *Gurney in Anderss. B. Dam. Ld.* p. 289 (1872: Ovampo); *Shelley, B. Egypt*, p. 267 (1872); *Hume, Str. F.* i. pp. 106, 253 (1873: Sind); *Gould, B. Gt. Brit.* iv. pl. 22 (1873); *Ball, Str. F.* ii. p. 434 (1874: Chota Nagpur); *Hume, Str. F.* iii. p. 190 (1875: Pegu); *Stoliczka, t. c.* p. 220 (Kashgar); *Irby, Orn. Strs. Gibr.* p. 184 (1875: Ras Doura); *Wharton, Ibis*, 1876, p. 27 (Corsica); *Butler, Str. F.* iv. p. 23 (1876: Mount Abou); *Scully, t. c.* p. 196 (Kashgar); *Fairb. t. c.* p. 263 (Deccan); *Butler, Str. F.* vii. p. 189 (1878: E. Narra, breeding); *Hume, Str. F.* vii. p. 114 (1879); *Scully, t. c.* p. 360 (Nepal Valley); *Legge, B. Ceylon*, p. 1139 (1880); *Reid, Str. F.* x. p. 75 (1881: Lucknow); *Bocage, Orn. Angola*, p. 442 (1881: Benguela; Loango; Lobito; Humbe); *Sharpe, ed. Layard's B. S. Afr.* p. 714 (1884); *Radde, Orn. Cauc.* pp. 42, 309

- (1884: breeding); *Murray, Vertebr. Faun. Sind*, p. 270 (1884); *Parker, Ibis*, 1886, p. 188 (Ceylon); *Salvad. Elenco Ucc. Ital.* p. 242 (1887); *Symonds, Ibis*, 1887, p. 335 (Kroonstad); *Oates ed. Hume's Nest & Eggs Ind. B.* iii. p. 237 (1890); *Sharpe, Rep. 2nd Yark. Miss., Aves*, p. 125 (1891).
- Herodias modesta*, *Gray, List Grallæ Brit. Mus.* p. 77 (1844); *id. Cat. Mamm. etc. Nepal pres. Hodgk.* p. 134 (1846).
- Herodias flavirostris*, *Gray, List Grallæ Brit. Mus.* p. 78 (1844: Gambia); *Gurney, Ibis*, 1859, p. 249, 1860, p. 205.
- Egretta modesta*, *Hodgk. Icon. ined. in Brit. Mus. Grallæ*, pl. 65, no. 794; *id. in Gray's Zool. Misc.* p. 86 (1844); *Bp. Consp. Av.* ii. p. 117 (1855).
- Herodias latieffi et Herodias brachyrhynchus*, *Brehm, J. f. O.* 1854, p. 80.
- Egretta melanorhyncha*, *Bp. Consp. Av.* ii. p. 117 (1855).
- Ardea magnifica*, *Verr. (ubi?) teste Bp. Consp. Av.* ii. p. 116 (1855).
- Ardea flavirostris (nec Wagl.)*, *Hartl. Orn. W.-Afr.* p. 220 (1857: Gambia; Ashantee; Gaboon; Mozambique).
- Egretta flavirostris (nec Wagl.)*, *Cass. Proc. Philad. Acad.* 1859, p. 173 (Camma River); *Antin. Cat. descr. Ucc.* p. 103 (1864: Senaar; Kordofan; Gazelle R.).
- Ardea alba*, *β. melanorhyncha*, *Savertz. Turkest. Jevotn.* p. 68 (1873).
- Herodias torra*, *Butler, Cat. B. Sind etc.* p. 69 (1879); *id. Cat. B. S. Bomb. Pres.* p. 82 (1880).

**Adult male in breeding-plumage.** Entirely pure white all over, with a bunch of elongated plumes on the back, the feathers on the fore-neck and sides of upper breast also fully developed and forming a shield on the sides of the latter: "bill black; lores and orbits pale green; feet blackish, tibiae paler; iris yellow" (*H. Saunders*). Total length about 44 inches, culmen 5.5, wing 15.8, tail 6.5, tarsus 7.75.

**Young.** Everywhere white like the adult, but the plumage softer and more downy, and of course devoid of the ornamental plumes; bill yellow, dusky at tip (in skin).

**Winter plumage.** White as in summer, but without the ornamental plumes and with a yellow bill.

The series of specimens in the Hume collection from Delhi was collected by that well-known naturalist, Major C. T. Bingham. He very carefully measured the specimens in the flesh, and I find that his dimensions for the tarsus vary slightly from my own, which have been taken from the skins. A male procured by Major Bingham on the 28th of April had the tarsus 8.25 inches and the bill from gape 6.5. The bird is in full winter plumage with no ornamental dorsal plumes, and had the following soft parts: "bill yellow, orbital skin and skin of cheeks greenish yellow; legs, feet, and claws inky black, iris bright yellow" (*C. T. Bingham*).

In June, Major Bingham collected three males and two females. One male, shot on the 17th of June, is beginning to don the ornamental plumes, but still has the bill yellow; in life, however, the bird was described as having "the upper mandible and orbits black, the lower mandible yellow, legs and feet black, and iris yellow. Tarsus 6.9, and bill from gape 5.5." Another male killed

on the 24th of June, not only has the dorsal plumes well developed, but has the bill black, showing that it is in full breeding-plumage: "bill, legs, and feet black, bare part of tibia reddish, bare skin of face greenish blue, iris buff." Tarsus 6·6, bill from gape 5·8. Another male, procured on the 27th of June, had the tarsus 7·5, bill from gape 5·9: "bill black, bare skin of face bluish green; bare part of tibia fleshy, tarsus and feet black; iris buffy yellow" (*C. T. Bingham*).

Both females procured in June are in breeding-plumage, with the train of ornamental plumes well developed. According to Major Bingham, the bird killed on the 13th had the tarsus 6·7, and the bill from gape 5·65, with the following soft parts: "bill black, skin of face bluish green; tibia fleshy, tarsi and feet black; iris buffy yellow." The other female, obtained on the 24th of June, is an extraordinarily small bird. I make the tarsus 5·25 inches, and even Major Bingham did not make it more than 5·4 when he measured the bird in the flesh. The soft parts were as follows: "bill, legs, and feet black; skin of face greenish blue; iris buff."

Three males from the Ajmere district vary very much in the measurement of the tarsus; they were procured in December and January, and are in winter plumage, without ornamental plumes, and have yellow bills. Two of them were shot on the same day at Kurran, about 70 miles from Ajmere, and the difference in size is enormous (tarsus 6·35–8·1); in the flesh Mr. Hume measured the tarsi as 6·6 and 8·4. The soft parts of the smaller bird were as follows: "tarsi and feet black, greyer on the upper part of the tibia; bill yellow, base of both mandibles yellowish green; lores and orbital space green; iris pale yellow" (*A. O. H.*). The larger male had the legs and feet blackish dusky, upper part of tibia yellowish horny: "bill and other soft parts the same as the other killed to-day" (*A. O. H.*).

*Hab.* Southern Europe, east to Central Asia, and south to Africa, the Indian Peninsula, and the Burmese countries.

|                                  |                                                                |                                 |
|----------------------------------|----------------------------------------------------------------|---------------------------------|
| a. Juv. sk.                      | Vörs, Hungary, June.                                           | Hungarian National Museum [P.]. |
| b. Ad. æst. sk.                  | Damietta, Egypt ( <i>Filippini</i> ).                          | Shelley Coll.                   |
| c, d. Hiem. sk.                  | River Gambia.                                                  | Governor Rendall.               |
|                                  | [t. 5·8].                                                      |                                 |
| e, f, g. Hiem. et vix æstiv. sk. | Gold Coast.                                                    | Shelley Coll.                   |
|                                  | [t. 6·2–6·9].                                                  |                                 |
| h. Hiem. sk.                     | Fantee ( <i>H. T. Ussher</i> ).                                | Shelley Coll.                   |
|                                  | [t. 5·3].                                                      |                                 |
| i. Hiem. sk.                     | Denkera ( <i>H. T. Ussher</i> ).                               | Sharpe Coll.                    |
|                                  | [t. 6·05].                                                     |                                 |
| k. Æstiv. sk.                    | Rabba, River Niger ( <i>W. A. F.</i> ).                        | Forbes Coll.                    |
|                                  | [t. 6·4].                                                      |                                 |
| l. ♀ hiem. sk.                   | Potchefstroom, Transvaal, Sept. ( <i>T. Ayres</i> ).           | Gurney Coll.                    |
|                                  | [t. 5·55].                                                     |                                 |
| m. Vix æstiv. sk.                | Kroonstadt, Orange Free State, March ( <i>F. A. Symonds</i> ). | Gurney Coll.                    |
|                                  | [t. 5·8].                                                      |                                 |
| n, o. Hiem. et æstiv. sk.        | Lower Shiré Valley ( <i>Sir J. Kirk</i> ).                     | Livingstone Expedition.         |
|                                  | [t. 6·8].                                                      |                                 |

|                                                                      |                                                                  |                                 |
|----------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------|
| p. Hiem. sk.<br>[t. 6-4].                                            | Usambara Hills ( <i>Sir J. Kirk</i> ).                           | Shelley Coll.                   |
| q. ♂ vix æstiv.<br>sk. [t. 5-4].                                     | Angollala, Shoa, May ( <i>Sir W. Harris</i> ).                   | India Museum.                   |
| r. ♂ æstiv. sk.<br>[t. 7-75].                                        | River Volga, May ( <i>Henke</i> ).                               | Tweeddale Coll.                 |
| s. ♂ æstiv. sk.<br>[t. 8-2].                                         | Candahar, Feb. 24.                                               | Colonel Swinhoe[P.].            |
| t, u. Vix æstiv.<br>sk. [t. 6-8-7-8].                                | Kashgar ( <i>Dr. Bellew</i> ).                                   | India Museum.                   |
| v. ♀ hiem. sk.<br>[t. 7-1].                                          | Kashgar, Dec. 6 ( <i>J. Scully</i> ).                            | Hume Coll.                      |
| w. ♂ hiem. sk.<br>[t. 6-6].                                          | Karachi, Oct. 24 ( <i>E. A. Butler</i> ).                        | Hume Coll.                      |
| x. ♂ hiem. sk.<br>[t. 8-1].                                          | Delhi, April 28 ( <i>C. T. Bingham</i> ).                        | Hume Coll.                      |
| y, z, a'. ♂ æstiv.<br>sk. [t. 6-45-6-9].                             | Delhi, June ( <i>C. T. Bingham</i> ).                            | Hume Coll.                      |
| b', c'. ♀ æstiv. sk.<br>[t. 5-25-6-7].                               | Delhi, June ( <i>C. T. Bingham</i> ).                            | Hume Coll.                      |
| d'. Juv. sk. [t. 6-7].                                               | Delhi, Oct. 10 ( <i>C. T. Bingham</i> ).                         | Hume Coll.                      |
| e'-g'. ♂ hiem. sk.<br>[t. 6-2-6-7].                                  | Sultanpur, Gurgaon Distr.,<br>Oct., Dec. ( <i>W. N. Chitt</i> ). | Hume Coll.                      |
| h', i'. ♂ ♀ æstiv.<br>[t. 6-8]; k', l'.<br>♀ æstiv. sk.<br>[t. 6-4]. | Sultanpur, Aug. 24 ( <i>W. N. Chitt</i> ).                       | Hume Coll.                      |
| m', n'. ♂ hiem. sk.<br>[t. 6-35-8-1].                                | Kurran, 70 miles from Ajmere,<br>Jan. 6 ( <i>A. O. H.</i> ).     | Hume Coll.                      |
| o'. Hiem. sk.<br>[t. 6-9].                                           | Ajmere, Dec. 6 ( <i>A. O. H.</i> ).                              | Hume Coll.                      |
| p'. Hiem. sk.<br>[t. 6-6].                                           | Etawah.                                                          | Hume Coll.                      |
| q'. Hiem. sk.<br>[t. 7-3].                                           | Oudh, March.                                                     | Hume Coll.                      |
| r', s', t'. Hiem.<br>et æstiv. sk.<br>[t. 6-0-7-3].                  | Oudh.                                                            | Pinwill Coll.                   |
| u', v'. Hiem. sk.<br>[t. 6-6-6-8].                                   | Nepal Valley, Sept., Dec. ( <i>J. Scully</i> ).                  | Hume Coll.                      |
| w'. Æstiv. sk.<br>[t. 6-1].                                          | Nepal.                                                           | Hodgson Coll.                   |
| x'. Æstiv. sk.<br>[t. 6-45].                                         | Darjiling Terai, May ( <i>L. Mandelli</i> ).                     | Hume Coll.                      |
| y'. ♂ ad. sk.<br>[t. 5-7].                                           | Assam ( <i>Montairo</i> ).                                       | India Museum.                   |
| z'. Vix æstiv. sk.<br>[t. 5-6].                                      | Raipur.                                                          | Hume Coll.                      |
| a''. ♂ hiem. sk.<br>[t. 6-45].                                       | Seoni.                                                           | Hume Coll.                      |
| b''. ♂ hiem. sk.<br>[t. 6-2].                                        | Mhow, Dec. 9.                                                    | Colonel Swinhoe[P.].            |
| c''. Hiem. sk.<br>[t. 5-3].                                          | Colachul, Travancore, Jan.                                       | F. W. Bourdillon,<br>Esq. [C.]. |
| d''. ♂ æstiv. sk.<br>t. 6-8].                                        | S.E. Coast of Ceylon, July.                                      | Colonel Legge [P.].             |

|           |                      |                                                    |
|-----------|----------------------|----------------------------------------------------|
| e''.      | Hiem. sk.            | Port Blair, S. Andamans (R. Hume Coll.             |
|           | [t. 5-7].            | J. Wimberley).                                     |
| f''.      | ♀ hiem. sk.          | S. Andamans (R. J. Wimber- Tweeddale Coll.         |
|           | [t. 6-6].            | ley).                                              |
| g''.      | ♂ hiem.              | Lower Pegu, Aug., Sept. (E. Oates Coll.            |
|           | [t. 6-2]; h''. ♀     | W. O.).                                            |
|           | æstiv. sk. [t. 5-5]. |                                                    |
| i''-j''.  | Æstiv. sk.           | Tonghoo. Tweeddale Coll.                           |
|           | [t. 5-5-5-9].        |                                                    |
| m''.      | ♀ æstiv. sk.         | Tapeng, Upper Burma, July 29. Dr. J. Anderson [C.] |
|           | [t. 5-7].            |                                                    |
| n''-p''.  | Hiem. sk.            | Kedai-Keglay, Tenasserim, Hume Coll.               |
|           | [t. 6-0-6-3].        | Dec. 16 (W. Davison).                              |
| q''.      | ♀ æstiv. sk.         | Thatone, Sept. 16 (W. Davi- Hume Coll.             |
|           | [t. 6-4].            | son).                                              |
| r'', s''. | ♀ hiem.              | Thatone, Nov., Dec. (W. D.). Hume Coll.            |
|           | sk. [t. 5-65].       |                                                    |
| t''.      | ♂ hiem. sk.          | Amherst, Jan. 14 (J. Arm- Hume Coll.               |
|           | [t. 5-7].            | strong).                                           |
| u''.      | ♂ æstiv. sk.         | South of Yea (W. Davison). Hume Coll.              |
|           | [t. 6-4].            |                                                    |
| v''.      | ♂ hiem. sk.          | Crab Island, Tavoy River, Hume Coll.               |
|           | [t. 6-2].            | April 30 (W. Davison).                             |
| w''.      | Ad. sk.              | India. Old Coll. (Type of                          |
|           |                      | <i>H. modesta.</i> )                               |
| x''.      | Skeleton.            | Purchased.                                         |

2. *Herodias egretta*.

Le Héron Blanc, pt., *Briss. Orn.* v. p. 428 (1760).  
 La Grande Aigrette d'Amérique, *Daubent. Pl. Enl.* viii. pl. 925.  
 La Grande Aigrette, *Buff. Hist. Nat. Ois.* vii. p. 377 (1780).  
 Great Egret, *Lath. Gen. Syn.* iii. pt. 1, p. 89 (1785).  
 ? *Ardea galatea*, *Molina, Saggio St. Chil.* p. 205 (1786); *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 409 (1817).  
 ? *Ardea thula*, *Gm. Syst. Nat.* i. p. 629 (1788).  
 Garza grande blanca con manto, *Azara, Apunt.* iii. p. 151 (1802).  
*Ardea egretta*, *Wilson, Amer. Orn.* vii. p. 106, pl. 61. fig. 4 (1813); *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 407 (1817); *Wagler, Syst. Av.* p. 176, *Ardeæ*, sp. 7 (1827); *Audub. B. Amer.* pl. 386; *Neuwied, Beitr. Naturg. Bras.* iv. p. 607 (1833); *Audub. Orn. Biogr.* iv. p. 600 (1838); *id. B. Amer.* 8vo, vi. p. 132, pl. 370 (1843); *Tschudi & Cab. Faun. Peruan., Aves*, pp. 49, 297 (1845-46); *Gray, Gen. B.* iii. p. 555 (1847); *Hartl. Ind. Azara*, p. 22 (1847); *Bryant, Proc. Bost. Soc. N. H.* viii. p. 120 (1859: Bahamas); *Schl. Mus. Pays-Bas, Ardeæ*, p. 17 (1863: pt.); *Léot. Ois. Trinid.* p. 406 (1866); *Bryant, Proc. Bost. Soc. N. H.* x. p. 257 (1866: Porto Rico); *Sundev. Öfv. K. Vet.-Akad. Förh. Stockh.* 1869, p. 602 (Porto Rico); *Gray, Hand-l. B.* iii. p. 27, no. 10109 (1871); *Pelz. Orn. Bras.* pp. 300, 455 (1871: Sapitiba; Ypanema; Rio de Boraxudo; Paranagua; Caiçara; Matogrosso; R. Amazon); *Coues, Key N. Amer. B.* p. 267 (1872); *Scl. P. Z. S.* 1873, p. 305; *id. & Salv. Nomencl. Av. Neotr.* p. 125 (1873); *Coues, B. N.-West*, p. 519 (1874); *Durnf. Ibis*, 1877, p. 189 (Buenos Ayres); *Reid, Zool.* 1877, p. 479 (Bermuda); *Gundl. An. Soc. Esp. Hist. Nat.* viii. p. 355 (1878: Porto Rico); *Hensh. Rep. Zool. Expl. 100th Merid.* p. 465 (1878: Utah); *Durnf. Ibis*, 1878, p. 399 (Chuput Valley); *Gibson, t. c.* p. 415 (Cape S. Antonio); *A. & E. Newt.*



- Handb. Jamaica*, p. 111 (1881); *Berlepsch, Ibis*, 1884, p. 438 (Angostura); *Barrows, Auk*, i. p. 271 (1884: Uruguay, breeding); *Seton, Auk*, ii. p. 336 (1885: Lake Nipissing); *Everm. Auk*, iii. p. 91 (1886: Ventura Co.); *Scott, t. c.* p. 385 (Arizona); *Tacz. Orn. Pérou*, iii. p. 391 (1886: Junin); *Ferrari-Perez, Proc. U.S. Nat. Mus.* ix. p. 169 (1886: Jalapa); *A.O.U. Check-l.* p. 136 (1886); *Salvin, Ibis*, 1886, p. 169 (Bartica Grove); *Ridgw. Man.* p. 130 (1887); *Treat, Auk*, iv. p. 78 (1887: Connecticut); *Scott, t. c.* pp. 136, 215 (S. Florida); *Cory, t. c.* p. 324 (Bahamas); *Scl. & Hudson, Argent. Orn.* ii. p. 98 (1888); *Richm. Auk*, v. p. 19 (1888: Distr. Columbia); *Merrill, t. c.* x. p. 143 (Ft. Klamath); *Chapm. t. c.* p. 269 (Florida); *Everm. t. c.* p. 348 (Indiana); *Salvin, Ibis*, 1889, p. 376 (Cozumel); *Feilden, t. c.* p. 498 (Barbados); *Scott, Auk*, vi. p. 17 (1889: Gulf Coast of Florida); *Pindar, t. c.* p. 312 (Kentucky); *Cory, B. Bahamas*, p. 167 (1890); *Ralph & Bagg, Auk*, vii. p. 230 (1890: New York); *Cherrie, t. c.* p. 332 (Costa Rica); *Holland, Ibis*, 1890, p. 425; *Brewst. & Chapm. Auk*, viii. p. 137 (1891); *Riker & Chapm. t. c.* p. 161 (Santarem); *Cory, t. c.* p. 294 (Cuba); *id. Cat. B. W. Ind.* p. 89 (1892: Bahamas; Greater & Lesser Antilles); *Graham Kerr, Ibis*, 1892, p. 144 (Paraná); *Holland, t. c.* p. 204 (Estancia Esparilla); *Fisher, N. Amer. Faun.* no. 7, p. 20 (1893: Death Valley Exped.); *Richm. Proc. U.S. Nat. Mus.* xvi. p. 527 (1893: Costa Rica; Nicaragua).
- Ardea leuce, Licht. Verz. Doubl.* p. 77 (1823, ex Illiger MSS.); *Cab. in Schomb. Reis. Guian.* iii. p. 752 (1848); *Burm. Th. Bras.* iii. p. 416 (1856: Lagoa Santa); *Bryant, Proc. Bost. Soc. N. H.* xi. p. 97 (1867: San Domingo).
- Egretta americana, Swains. Classif. B.* ii. p. 354 (1837).
- Ardea alba (nec L.), d'Orb. in Ramon de la Sagra, Hist. Nat. Cuba*, p. 191 (1839).
- Egretta leuce, Gould in Darwin's Voy. 'Beagle,' Birds*, p. 128 (1841: Maldonado; Patagonia); *Gosse, B. Jamaica*, p. 346 (1847); *Bp. Consp.* ii. p. 114 (1855).
- Herodias egretta, Gundl. J. f. O.* 1866, p. 341 (Cuba); *Baird, Brewer, & Ridgw. B. N. Amer.* p. 666 (1858); *Scl. P. Z. S.* 1861, pp. 70, 80; *March, Proc. Philad. Acad.* 1864, p. 63; *Hensh. Rep. Zool. 100th Merid.* p. 465 (1875: Utah); *Gundl. An. Soc. Esp. H. N.* viii. p. 355 (1878: Porto Rico); *Sennett, Bull. U.S. Geol. Surv.* iv. p. 59 (1878: Brownsville); *Merrill, Proc. U.S. Nat. Mus.* i. p. 164 (1878: Texas); *Belding, t. c.* p. 391 (California); *Lawr. t. c.* p. 241 (Barbuda); *Nutting, Proc. U.S. Nat. Mus.* v. p. 406 (1882: Nicoya); *Belding, t. c.* pp. 544, 548 (Lower California); *Nutting, Proc. U.S. Nat. Mus.* vi. p. 379 (1883: Nicaragua); *Baird, Brewer, & Ridgw. Water-B. N. Amer.* ii. p. 23 (1884); *Coues, Key N. Amer. B.* p. 658 (1884).
- Herodias egretta, var. californica, Baird, Cass., & Lawr. B. N. Amer.* p. 666 (1858); *Xantus, Proc. Philad. Acad.* 1869, p. 192.
- Herodias leuce, Sallé, P. Z. S.* 1857, p. 236 (S. Domingo).
- Herodias alba leuce, Ridgw. Bull. Essex Inst.* 1874, p. 171; *id. Proc. U.S. Nat. Mus.* iii. p. 197 (1880).

*Adult male in breeding-plumage.* White all over. Similar to *H. alba*, but with a very much more developed train, and having the bare part of the tibia always black, like the tarsi and toes. The bill is generally yellow, but many of the breeding birds get a good deal of black along the culmen: "bill and lores rich chrome-



yellow (the latter sometimes tinged with green), the culmen usually black near the tip, sometimes nearly the entire maxilla black; legs and feet entirely deep black; iris naples yellow" (*R. Ridgway*). Total length 38 inches, culmen 4.4, wing 15.7, tail 6.3, tarsus 5.8. Dorsal train extending 9 inches beyond the tip of the tail.

*Adult female.* Similar to the male, and having the greatly developed train of ornamental plumes, but the measurements somewhat smaller. Total length 36 inches, culmen 4.2, wing 14.7, tail 5.4, tarsus 5.6. Dorsal train extending 7 inches beyond the tip of the tail.

*Adult in winter plumage.* White as in summer, but without the ornamental plumes on the back.

*Young.* Perfectly white like the adult, but the feathers are of a more downy texture; the bill entirely yellow except at the end, where it is a little blackish.

*Hab.* America, from the temperate portions of North America southward, throughout the whole of Central and South America, with the West Indian islands, to Chili and Patagonia.

|                                                                                |                                                                            |                              |
|--------------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------------|
| a. <i>Æstiv. sk.</i> [t. 5.8].                                                 | North America.                                                             | J. J. Audubon, Esq.<br>[P.]. |
| b. Juv. sk. [t. 5.7].                                                          | Mount Carmel, Illinois, July 27 ( <i>E. W. Nelson: Hensh. Coll.</i> ).     | Salvin-Godman Coll.          |
| c. ♀ juv. sk. [t. 5.4].                                                        | Mount City, Illinois, Aug. 28 ( <i>E. W. Nelson: Hensh. Coll.</i> ).       | Salvin-Godman Coll.          |
| d. ♂ juv. sk. [t. 6.4].                                                        | Camp Bidwell, California, July 26 ( <i>H. W. Henshaw</i> ).                | Salvin-Godman Coll.          |
| e. ♂ <i>æstiv.</i> ; f, g. ♀ <i>æstiv. sk.</i> [t. 6.0-5.4].                   | Ocklawaha River, Florida, April 20 ( <i>C. H. Merriam: Hensh. Coll.</i> ). | Salvin-Godman Coll.          |
| h. ♂ <i>æstiv. sk.</i> [t. 6.0].                                               | Tarpon Springs, Florida, Jan. 15 ( <i>W. E. D. Scott</i> ).                | Salvin-Godman Coll.          |
| i, k. ♂ <i>æstiv.</i> [t. 5.8-6.2]; l, m, n. ♀ <i>æstiv. sk.</i> [t. 5.1-5.6]. | Tarpon Springs, Feb. ( <i>W. E. D. Scott</i> ).                            | Salvin-Godman Coll.          |
| o-r. ♂ <i>æstiv.</i> [t. 5.5-6.0]; s, t. ♀ <i>æstiv. sk.</i> [t. 5.0-5.6].     | Tarpon Springs, March ( <i>W. E. D. Scott</i> ).                           | Salvin-Godman Coll.          |
| u, v. ♂ juv. et ♀ <i>æstiv. sk.</i> [t. 6.0-5.9].                              | Tarpon Springs, April, May ( <i>W. E. D. Scott</i> ).                      | Salvin-Godman Coll.          |
| w, x. ♂ ♀ juv. sk. [t. 5.0-5.5].                                               | Tarpon Springs, June, July ( <i>W. E. D. Scott</i> ).                      | Salvin-Godman Coll.          |
| y. Juv. sk. [t. 5.6].                                                          | San Antonio, Texas ( <i>H. E. Dresser</i> ).                               | Salvin-Godman Coll.          |
| z. ♀ <i>æstiv. sk.</i> [t. 5.7].                                               | Brownsville, Texas, April 12 ( <i>F. B. Armstrong</i> ).                   | Salvin-Godman Coll.          |
| α'. ♂ <i>æstiv. sk.</i> [t. 6.4].                                              | Brownsville, April 12 ( <i>F. B. Armstrong</i> ).                          | Salvin-Godman Coll.          |
| β'. ♀ <i>æstiv. sk.</i> [t. 5.3].                                              | Brownsville.                                                               | Salvin-Godman Coll.          |
| γ'. ♂ <i>æstiv. sk.</i> [t. 6.3].                                              | Brownsville, May 3 ( <i>F. B. Armstrong</i> ).                             | Salvin-Godman Coll.          |
| δ'. ♂ <i>æstiv. sk.</i> [t. 6.7].                                              | Brownsville ( <i>F. B. Armstrong</i> ).                                    | Salvin-Godman Coll.          |

|                                    |                                                     |                                      |
|------------------------------------|-----------------------------------------------------|--------------------------------------|
| e'. Juv. sk.                       | Ciudad Durango, Mexico                              | Salvin-Godman Coll.                  |
|                                    | (A. Forrer).                                        |                                      |
| f'. ♀ nest [t. 6-8];<br>g'. m. sk. | Presidio, Jan. 5 (A. Forrer).                       | Salvin-Godman Coll.                  |
| h'. i. m. [t. 5-8] juv. sk.        | Tamaulipas (W. B. Richardson).                      | Salvin-Godman Coll.                  |
| k'. ♂ juv. s. [t. 5-9].            | S. Baltazar, Puebla, July 4 (F. Ferrari-Perez).     | Salvin-Godman Coll.                  |
| l'. ♂ juv. sk. [t. 6-8].           | Santana, Guadalajara, Jalisco, March 15 (W. Lloyd). | Salvin-Godman Coll.                  |
| m. sk.                             | Acapulco, March (A. H. Markham).                    | Salvin-Godman Coll.                  |
| sk.                                | Cozumel Island (G. F. Gaumer).                      | Salvin-Godman Coll.                  |
| [t. 5-5]                           | Lake of Duéñas, Guate-                              | Salvin-Godman Coll.                  |
|                                    | ica (J.                                             | Salvin-Godman Coll.                  |
|                                    | ragua, Rich-                                        | Salvin-Godman Coll.                  |
| n. ♂ ad. sk.                       | Escom, r, Dec. 18                                   | Salvin-Godman Coll.                  |
|                                    | (t mond).                                           |                                      |
| o'. Activ. sk. [t. 5-9].           | Boy                                                 | Capt. Kellott & Lieut. Wood.         |
| p'. ♂ hiem. sk. [t. 5-7].          | Puba, July (G. F.                                   | Salvin-Godman Coll.                  |
| z'. Ad. sk. [t. 6-1].              | er, Surinam                                         | Salvin-Godman Coll.                  |
| a''. ♀ juv. sk. [t. 5-65].         | B. ve, British Gui-                                 | Salvin-Godman Coll.                  |
|                                    | ana, 1 (H. Whitely).                                |                                      |
| b''. Hiem. sk. [t. 6-5].           | Sarayacu, Ecuador (C. Buckley).                     | Salvin-Godman Coll.                  |
| c''. ♂ activ. sk. [t. 6-1].        | Nauta, Peruvian Amazons, Jan. 22 (E. Bartlett).     | Salvin-Godman Coll.                  |
| d''. ♂ ad. sk. [t. 6-0].           | Ypanema, Brazil, April 4, 1819 (J. Natterer).       | Salvin-Godman Coll.                  |
| e''. Activ. sk. [t. 6-2].          | East Patagonia.                                     | Sir W. Burnett & Adml. Fitzroy [P.]. |
| f''. ♂ hiem. sk. [t. 5-5].         | Chupat, Patagonia, April 8.                         | H. Durnford, Esq. [C.].              |
| g''. ♀ hiem. sk. [t. 5-0].         | Sacaya, Tarapacá, March 18 (A. A. Lane).            | Berkeley James Coll.                 |
| h'', i'. Hiem. sk. [t. 5-3-5-55].  | Central Chili.                                      | Berkeley James Coll.                 |

### 3. *Herodias timoriensis*.

*Ardea flavirostris* (nec Vieill.), *Wagler, Syst. Av.*, *Ardea*, p. 177, sp. 9 (1827, pt.).

*Ardea timoriensis*, *Cuv. Mus. Paris; Less. Traité*, p. 575 (1831); *Pucher. Rev. et Mag. de Zool.* 1851, p. 377.

*Ardea longicollis*, *Meyen, Nova Acta C. L. C. Acad. Cur.* xvi. Suppl. i. p. 104 (1834: Philippines); *Walden, Tr. Z. S.* ix. p. 296 (1875).

*Herodias flavirostris*, *Gray, Voy. Erebus & Terror, Birds*, p. 12 (1843); *id. Ibis*, 1862, p. 235.

*Herodias symmatophorus*, *Gould, B. Austr.* vi. pl. 56 (1848); *Macy, Voy. Rattlesn.* ii. p. 358 (1852: Torres Straits); *Blyth, Ibis*, 1865, p. 36; *Rosend. Reis naar Zuidoostereil.* pp. 53, 82 (1867).

- Egretta syrmatophora*, *Bp. Consp.* ii. p. 115 (1855); *Rosenb. N. T. Nederl. Ind.* xxv. p. 253 (1863); *id. J. f. O.* 1864, p. 136.
- Ardea syrmatophora*, *Gray, P. Z. S.* 1858, p. 197; *id. Cat. B. New Guinea*, p. 62 (1859); *Buller, B. N. Zeal.* p. 236 (1873).
- Herodias egretta* (*nec Gm.*), *Swinh. Ibis*, 1860, p. 64 (Amoy), 1861, p. 51; *Walden, Tr. Z. S.* vii. p. 99 (1872); *Salvad. Ann. Mus. Genov.* viii. p. 384 (1876: Bourou), xi. p. 667 (1879: Kei Isl.).
- Ardea* (*Egretta*) *alba*?, *Gray, P. Z. S.* 1860, p. 363 (Ternate).
- Ardea egretta*, pt. (*nec Gm.*), *Schl. Mus. Pays-Bas*, *Ardeæ*, p. 17 (1863); *Finsch, Neu-Guinea*, p. 183 (1865); *Schl. N. T. D.* iii. p. 348 (1866: Aru; Kei); *Rosenb. Malay. Archip.* pp. 278, 373 (1878-79); *Buller, B. New Zeal.* 2nd ed. ii. p. 124, pl. xxxvi. fig. 2 (1888).
- Herodias alba* (*nec L.*), *Swinh. Ibis*, 1863, p. 417 (Formosa); *Gould, Handb. B. Austr.* ii. p. 301 (1865); *Swinh. Ibis*, 1870, p. 365 (Hainan); *D'Albert. Ann. Mus. Genov.* x. p. 20 (1878); *Salvad. t. c.* note; *David & Oust. Ois. Chine*, p. 439 (1877: China generally); *Ramsay, Proc. Linn. Soc. N. S. W.* ii. p. 199 (1877); *id. P. Z. S.* 1877, p. 341 (Queensland); *Forbes, P. Z. S.* 1884, p. 434.
- Ardea intermedia* (*nec Wagl.*), *Finsch, J. f. O.* 1867, p. 332.
- Egretta modesta* (*nec Gray*), *Swinh. P. Z. S.* 1871, p. 412 (China; Hainan; Formosa); *Blakist. & Pryer, Ibis*, 1878, p. 224 (Tokio; Yezo); *Seeb. Ibis*, 1879, p. 27.
- Herodias torra* (*nec Frankl.*), *Salvad. Ucc. Born.* p. 347 (1874); *Hume, Str. F.* vi. p. 472 (1878); *id. Str. F.* viii. p. 114 (1879); *Salvad. Ann. Mus. Genov.* xviii. p. 333 (1882); *id. Orn. Papuasia*, iii. p. 350 (1882); *Meyer, Sitz. Abh. Ges. Isis, Dresden*, Abth. i. p. 66 (1884: Timor Laut; Ceram); *Pleske, Bull. Acad. St. Pétersb.* xxix. p. 537 (1884: Ternate); *Salvad. Agg. Orn. Papuasia*, iii. p. 206 (1891).
- Ardea alba*, var. *modesta*, *Brüggem. Abhandl. nat. Ver. Bremen*, v. p. 96 (1876).
- Ardea alba* (*nec L.*), *Seeb. Ibis*, 1887, p. 182 (Loo Choo Isl.); *id. B. Japan. Emp.* p. 216 (1890).

*Adult.* Similar to *H. alba*, but with the bill yellow in summer and winter; the train of dorsal plumes not very long and scarcely reaching beyond the tail: "bill beautiful orange; naked space before and behind the eye fine greenish yellow; legs above the knee pale dull yellow, this colour continued down the centre of the inner part of the tarsi; remainder of tarsi and feet black" (*J. Gould*). Total length 30 inches, culmen 4.4, wing 15, tail 6.3, tarsus 5.2-6.4.

*Hab.* From Japan and N. China, south through the Malayan Archipelago to Australia.

- |                           |                                         |                      |
|---------------------------|-----------------------------------------|----------------------|
| a. ♂ æstiv. sk. [t. 5.9]. | Nagasaki, Japan, April 22.              | F. Ringer, Esq. [P.] |
| b. Hiem. sk. [t. 5.4].    | Hakodadi ( <i>Capt. Blakiston</i> ).    | Seebohm Coll.        |
| c. Hiem. sk. [t. 5.4].    | China.                                  | J. Reeves, Esq. [P.] |
| d. Hiem. sk. [t. 5.4].    | China ( <i>Capt. Tuckett</i> ).         | Tweeddale Coll.      |
| e. ♂ hiem. sk. [t. 6.7].  | Chefoo, Sept. 29 ( <i>R. Swinhoe</i> ). | Seebohm Coll.        |
| f. Hiem. sk. [t. 5.8].    | Ningpo, Aug. ( <i>R. Swinhoe</i> ).     | Seebohm Coll.        |
| g. Hiem. sk. [t. 5.4].    | Canton ( <i>S. Bligh</i> ).             | Seebohm Coll.        |
| h. Hiem. sk. [t. 6.6].    | Canton.                                 | Tweeddale Coll.      |
| i. Hiem. sk. [t. 6.2].    | Amoy, Nov. ( <i>R. Swinhoe</i> ).       | Seebohm Coll.        |
| k. Hiem. sk. [t. 6.1].    | Fokien.                                 | Gould Coll.          |

|                                           |                                                         |                          |
|-------------------------------------------|---------------------------------------------------------|--------------------------|
| <i>l.</i> Hiem. sk. [t. 5·75].            | Hainan, Feb. ( <i>R. Swinhoe</i> ).                     | Seebohm Coll.            |
| <i>m.</i> Hiem. sk. [t. 6·0].             | Benkoka, N. Borneo.                                     | J. Whitehead, Esq. [P.]. |
| <i>n.</i> Æstiv. sk. [t. 5·6].            | Java ( <i>Diard</i> ).                                  | Salvin-Godman Coll.      |
| <i>o.</i> ♂ hiem. sk. [t. 6·0].           | Ayer Pannas, Celebes, Aug. 16 ( <i>Von Rosenberg</i> ). | Salvin-Godman Coll.      |
| <i>p.</i> Hiem. sk. [t. 5·6].             | Sula Islands.                                           | Wallace Coll.            |
| <i>q.</i> Vix æstiv. sk. [t. 6·6].        | Morotai.                                                | Wallace Coll.            |
| <i>r.</i> ♀ hiem. sk. [t. 5·7].           | Ternate.                                                | Wallace Coll.            |
| <i>s.</i> ♀ vix æstiv. sk. [t. 5·35].     | East Timor.                                             | Wallace Coll.            |
| <i>t, u.</i> Vix æstiv. sk. [t. 5·2-5·3]. | Australia.                                              | Gould Coll.              |
| <i>v.</i> ♂ hiem. sk. [t. 6·3].           | N.W. Australia ( <i>T. H. Bowyer Bower</i> ).           | Capt. Bowyer Bower [P.]. |
| <i>w.</i> Hiem. sk. [t. 5·8].             | Queensland ( <i>J. T. Cockerell</i> ).                  | Salvin-Godman Coll.      |
| <i>x.</i> Vix æstiv. sk. [t. 6·0].        | New South Wales.                                        | Imperial Institute [P.]. |
| <i>y.</i> Æstiv. sk. [t. 5·3].            | New South Wales.                                        | Gould Coll.              |
| <i>z.</i> Æstiv. sk. [t. 5·75].           | Murray River, S. Australia, Sept. 5.                    | Capt. Sturt [P.].        |
| <i>a'.</i> Hiem. sk. [t. 5·5].            | Port Lincoln, S. Australia.                             | Hume Coll.               |
| <i>b'.</i> Æstiv. sk. [t. 5·3].           | Little Swan Point, Tasmania.                            | J. B. Jukes, Esq. [P.].  |
| <i>c'.</i> Hiem. sk. [t. 6·4].            | New Zealand ( <i>O. Finsch</i> ).                       | Dr. R. B. Sharpe [P.].   |
| <i>d'.</i> Hiem. sk. [t. 5·9].            | New Zealand.                                            |                          |
| <i>e'.</i> Hiem. sk. [t. 5·2].            | New Zealand.                                            | Gould Coll.              |
| <i>f'.</i> Hiem. sk. [t. 5·8].            | New Zealand.                                            | Colonial Museum [P.].    |

## 5. FLORIDA.

|                                                                                     |                   |
|-------------------------------------------------------------------------------------|-------------------|
| Florida, <i>Baird, B. N. Amer.</i> p. 671 (1858).....                               | Type. F. cærulea. |
| <i>Glaucerosodius, Heine &amp; Reichen. Nomencl. Mus. Hein.</i> p. 307 (1890) ..... | F. cærulea.       |

*Range.* Temperate Eastern North America, to Central and Northern South America. West Indies.

## 1. Florida cærulea.

The Blew Heron, *Catesby, Nat. Hist. Carol.* i. pl. 76 (1731).  
 Le Héron cendré du Mexique, *Briss. Orn.* v. p. 404 (1760).  
 Le Héron cendré d'Amérique, *Briss. t. c.* p. 406.  
 Le Crabier du Brésil, *Briss. t. c.* p. 479.  
 Le Crabier bleu, *Briss. t. c.* p. 484.  
*Ardea cærulea*, *Linn. Syst. Nat.* i. p. 238 (1766); *Wilson, Amer. Orn.* vii. p. 117, pl. 62. fig. 3 (1813); *Audub. B. Amer.* pl. cccvii. (c. 1826); *Neuwied, Beitr. Naturg. Bras.* iv. p. 604 (1833); *Audub. Orn. Biogr.* iv. p. 58 (1838); *D'Orbign. in Ramon de la Sagra, Hist. Nat. Cuba, Ois.* p. 201 (1839); *Audub. B. Amer.* 8vo, vi. p. 148, pl. 372 (1843); *Denny, P. Z. S.* 1847, p. 36 (Jamaica); *Gray, Gen. B.* iii. p. 556 (1847); *Burm. Th. Bras.* iii. p. 414 (1856); *Bryant, Proc. Bost. Soc. N. H.* vii. p. 120 (1859: Bahamas); *A. & E. Newton, Ibis*, 1859, p. 373 (St. Croix); *Burm. Reise La Plata-Stat.* ii. p. 509 (1861); *Schl. Mus. Pays-Bas, Ardeæ*, p. 22 (1863); *E. C. Taylor, Ibis*, 1864, p. 95 (Trinidad), p. 171 (Porto Rico); *Léotaud, Ois. Trinidad*, p. 410

- (1866); *Bryant, Proc. Bost. Soc. N. H.* x. p. 257 (1866: Porto Rico); *Scl. & Salv. P. Z. S.* 1867, p. 280 (Blewfields R., Mosquitia Coast); *ibid.* *P. Z. S.* 1869, p. 252 (Lake Valencia, Venezuela); *Sundev. Öfv. K. Vet.-Akad. Förh.* 1869, p. 588 (St. Bartholomew), p. 602 (Porto Rico); *Salvin, P. Z. S.* 1870, p. 218 (Veragua); *Finsch, t. c.* p. 589 (Trinidad); *Wyatt, Ibis*, 1871, p. 384 (Lake Paturia; Cienaga, U.S. Colombia); *Pelz. Orn. Bras.* pp. 301, 455 (1871: San Paulo); *Coues, Key N. Amer. B.* p. 268 (1872); *Scl. & Salv. Nomencl. Av. Neotr.* p. 125 (1873); *Tacz. P. Z. S.* 1877, p. 745; *Lawr. Proc. U.S. Nat. Mus.* i. p. 48 (1879: Dominica), p. 451 (Guadeloupe); *Maynard, B. East. N. Am.* p. 414 (1879); *Allen, Bull. Nutt. Orn. Club*, v. p. 169 (1880: Santa Lucia); *A. & E. Newton, Handb. Jamaica*, p. 111 (1881); *Cory, Bull. Nutt. Orn. Club*, vi. p. 155 (1881: Haiti); *Salvin, P. Z. S.* 1883, p. 427 (Acapulco, March); *Tristr. Ibis*, 1884, p. 168 (S. Domingo); *Cory, B. San Domingo*, p. 154 (1885); *id. List B. West Ind.* p. 28 (1885); *A. O. U. Check-l. N. Amer. B.* p. 137 (1886); *Salvin, Ibis*, 1886, p. 169 (British Guiana); *Tacz. Orn. Pérou*, iii. p. 394 (1886: Tumbes); *Scott, Auk*, iii. p. 308 (1886: Dry Tortugas); *Schick, t. c.* p. 327 (New Jersey); *Cherrie, t. c.* p. 332 (Costa Rica); *Cory, t. c.* p. 374 (Tortola); *Beckh. Proc. U.S. Nat. Mus.* x. pp. 637, 642 (1887: Bexar Co., Texas), p. 649 (San Antonio); *Chapm. Auk*, v. p. 268 (1888: Gainesville, Florida); *Scott, Auk*, vi. p. 18 (1889: Tarpon Springs, Florida); *Scl. & Huds. Argent. Orn.* ii. p. 99 (1889); *Salv. Ibis*, 1889, p. 376 (Cozumel Isl.); *Cory, B. West Ind.* p. 246 (1889); *id. B. Bahamas*, 2nd ed. p. 171 (1890); *Warren, B. Pennsylv.* p. 62 (1890); *Cory, Auk*, viii. p. 47 (1891: S. Eustatius, W.I.); *Northrop, t. c.* p. 77 (Andros Isl.); *Brewst. & Chapm. t. c.* p. 187 (Suwanee River); *Cory, Cat. B. West Ind.* p. 90 (1892); *Scott, Auk*, ix. p. 10 (1892: Jamaica), p. 211 (Florida); *Attwater, t. c.* p. 232 (San Antonio); *Cory, t. c.* p. 272 (Cuba); *Cherrie, t. c.* p. 329 (San José, Costa Rica); *McCormick, t. c.* p. 397 (Oberlin, N. Ohio); *Allen, Auk*, x. p. 132 (1893); *Brimley, t. c.* p. 243 (Raleigh, N. C.); *Dutcher, t. c.* p. 271 (Long Isl.); *Aplin, Ibis*, 1894, p. 198 (Uruguay, Dec.).
- Héron bleuâtre de Cayenne, *D'Aubent. Pl. Enl.* viii. pl. 349.
- Le Crabier cendré, *Buff. Hist. Nat. Ois.* vii. p. 401 (1781).
- ? *Ardea thula*, *Molina, Sagg. Stor. Nat. Chili*, p. 344 (1782); *Fraser, P. Z. S.* 1843, p. 116 (Chili).
- Blue Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 78 (1785); *Nuttall, Man. Orn.* ii. p. 58 (1840).
- Blue Heron, var. A, *Lath. t. c.* p. 79.
- Little White Heron, var. B, *Lath. t. c.* p. 94.
- Cinereous Heron, *Lath. t. c.* p. 71.
- ? *Ardea ohula*, *Gm. Syst. Nat.* i. p. 633 (1788); *Gray, Gen. B.* iii. p. 556 (1847).
- Ardea cyanopus*, *Gm. Syst. Nat.* i. p. 644 (1788).
- ? *Ardea plumbea*, *Brown, Nat. Hist. Jamaica*, p. 478 (1789).
- Ardea caerulescens*, *Lath. Ind. Orn.* ii. p. 690 (1790); *Licht. Verz. Doubl.* p. 77 (1823: S. America); *Wagl. Syst. Av.*, *Ardea*, p. 180, sp. 15 (1827); *Cab. in Schomb. Reis. Guian.* iii. p. 753 (1848).
- Ardea chalybea*, *Stephens in Shaw's Gen. Zool.* xi. pt. 2, p. 582 (1819).
- Ardea ardesiaca* (nec *Wagl.*), *Less. Traité d'Orn.* p. 575 (1831).
- Egretta caerulea*, *Jard. ed. Wilson's Amer. Orn.* iii. p. 20, pl. lxii. fig. 3 (1832); *Bp. Comp. List B. Eur. & N. Amer.* p. 47 (1838);

- Gosse, B. Jamaica*, p. 337 (1837); *Licht. Nomencl. Av. Mus. Berol.* p. 89 (1854: Cayenne).  
*Herodias cærulea*, *Gray, List Grall. Brit. Mus.* p. 79 (1844: Island of Puna); *Bp. Consp. Av.* ii. p. 123 (1855); *Brewer, Proc. Bost. Soc. N. H.* vii. p. 308 (1860: Cuba); *Gundl. J. f. O.* 1862, p. 83 (Cuba).  
 ? *Egretta nivea*, *Gosse, B. Jamaica*, p. 334 (1837).  
*Herodias poucheti*, *Bp. Consp. Av.* ii. p. 123 (1855).  
*Florida cærulea*, *Baird, B. N. Amer.* p. 671 (1858); *Sci. & Salv. Ibis*, 1859, p. 226 (Coban, Guatemala); *Moore, P. Z. S.* 1859, p. 63 (Omoa; Belize); *Sci. P. Z. S.* 1860, p. 253 (Mexico), 1861, p. 81 (Jamaica); *G. C. Taylor, Ibis*, 1862, p. 129 (Florida); *Albrecht, J. f. O.* 1862, p. 205 (Jamaica); *March, Proc. Philad. Acad.* 1864, p. 62 (Jamaica); *Dresser, Ibis*, 1866, p. 31 (Texas); *Gundl. Repert. Fisico-Nat. Cuba*, i. p. 349 (1866); *Allen, Bull. Harv. Coll.* ii. p. 359 (1871: Florida); *Lawr. Mem. Bost. Soc. N. H.* ii. p. 310 (1874: Mazatlan); *Gundl. J. f. O.* 1875, p. 505 (Cuba); *id. Orn. Cubana*, p. 153 (1876); *Lawr. Bull. U.S. Nat. Mus.* iv. p. 49 (1876: Tehuantepec); *Sennett, Bull. U.S. Geol. Surv.* iv. p. 61 (1878: Brownsville, Texas); *Lawr. Proc. U.S. Nat. Mus.* i. p. 196 (1878: St. Vincent), p. 256 (Antigua), p. 241 (Barbuda), p. 274 (Grenada), p. 359 (Martinique), p. 487; *Ridgw. op. cit.* iii. p. 197 (1880); *Coues, Check-l. N. Amer. B.* p. 107 (1882); *Nutting, Proc. U.S. Nat. Mus.* v. p. 406 (1882: Nicoya, Costa Rica); *Baird, Brewer, & Ridgw. Water-Birds N. Amer.* i. p. 43 (1884); *Coues, Key N. Amer. B.* 2nd ed. p. 661 (1884); *Nutting, Proc. U.S. Nat. Mus.* vi. p. 379 (1884: Nicaragua).  
*Ardea cærulea*, var. *alba*, *Reichen. J. f. O.* 1877, p. 264.  
*Ardea cærulea*, var. *cyanopus*, *Reichen. J. f. O.* 1877, p. 264.  
*Glaucerosdus cæruleus*, *Heine & Reichen. Nomencl. Mus. Hein.* p. 307 (1890).

*Nestling.* Pure white, with the exception of the tips of the quills, which are shaded with blackish; the primary-coverts are also generally powdered with blackish, but this is not invariably the case. The colour of the feathery down on the head of the nestling varies somewhat, being sometimes greyish white, sometimes yellowish, sometimes light brown, and in one specimen in the Scott collection it is rufescent. The magnificent series of skins from Florida, in the Salvin-Godman collection, obtained by Mr. W. E. D. Scott, affords a very complete study of the changes of plumage undergone by the young birds. It is curious to remark that not a few nestlings have already a grey shade on the crown, and that the amount of black marking at the end of the quills also varies considerably, while in some of the young birds there is no trace of any shading on the primary-coverts or bastard-wing. The blackish marking, however, at the end of the quills is never absent, and is an unfailing character by which to distinguish the young of *F. cærulea* from the other white American Herons.

It appears that the young bird in its first autumn loses much of its blackish powdering on the primaries, while the markings on the primary-coverts disappear almost entirely. At the same time a shade of grey gradually pervades the head, and even the entire upper surface of the bird, being assumed by a moult. The wing-coverts and quills, however, appear to be clean moulted, and several

specimens procured by Mr. Scott in May and June are in this curious parti-coloured stage.

In autumn, according to Mr. Ridgway, "the bill is light plumbeous on the basal half, the terminal half being black; lores and eyelids very pale dull greenish; legs and feet uniform pea-green, darker at the joints; iris sulphur-yellow."

*Adult male in breeding-plumage.* General colour above bluish slate-colour, the long ornamental scapular plumes of the same colour as the back; wings and tail also slaty grey; head and neck all round dark maroon, including the ornamental nape-feathers; the head washed with slaty grey, of which there is also a slight appearance on the throat; the long ornamental plumes on the throat and fore-neck bluish slate-colour; remainder of under surface of body dingy slate-colour, lighter and more bluish grey on the under wing-coverts and axillaries: "bill ultramarine-blue at the base, the end black; lores and eyelids ultramarine-blue; tibia, tarsi, and toes black; iris pale yellow" (*R. Ridgway*). Total length about 22 inches, culmen 3, wing 11, tail 4, tarsus 3·8, middle toe and claw 2·9.

*Adult female in breeding-plumage.* Similar to the male in colour, but the ornamental plumes not quite so long. Total length about 21 inches, culmen 2·95, wing 10·7, tail 3·8, tarsus 3·5, middle toe and claw 2·6.

Mr. Ridgway says that old birds are also sometimes entirely pure white.

*Hab.* Central and Temperate portion of Eastern United States, south to the West Indies and Central America, to Guiana, Colombia, Ecuador, and Brazil.

|                                            |                                                                                   |                             |
|--------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------|
| a. Juv. sk.                                | Mound City, Illinois, Aug. 28<br>( <i>E. W. Nelson: Hensh. Coll.</i> ).           | Salvin-Godman Coll.         |
| b. ♂ ad. sk.                               | Bermuda, May 4.                                                                   | Capt. Savile Reid<br>[C.]   |
| c. Juv. sk.                                | Florida.                                                                          | W. B. Dismore, Esq.<br>[P.] |
| d-g'. ♂, h''-x².<br>♀ ad. et juv.          | Tarpon Springs, Florida, March<br>to November ( <i>W. E. D. Scott</i> ).          | Salvin-Godman Coll.         |
| g². ♀ juv. sk.                             | Cedar Keys, Florida, Dec. 2<br>( <i>Hensh. Coll.</i> ).                           | Salvin-Godman Coll.         |
| x²-e¹. ♂ ad.; f¹, g¹.<br>♀ ad. et juv. sk. | Brownsville, Texas, Feb., March,<br>April, Nov. ( <i>F. B. Arm-<br/>strong</i> ). | Salvin-Godman Coll.         |
| h¹-k¹. ♂ juv. sk.                          | Corpus Christi, March, Oct. ( <i>F.<br/>B. Armstrong</i> ).                       | Salvin-Godman Coll.         |
| l¹. ♂ ad.; m¹, n¹.<br>♂ ♀ juv. sk.         | Presidio, Mexico, Jan., Feb.<br>( <i>A. Forrer</i> ).                             | Salvin-Godman Coll.         |
| o¹. ♂ ad.; p¹. ♀<br>juv. sk.               | Mazatlan, Nov., Jan. ( <i>A.<br/>Forrer</i> ).                                    | Salvin-Godman Coll.         |
| q¹. Juv. sk.                               | Tonala, Chiapas, Dec. 6 ( <i>F.<br/>Sumichrast</i> ).                             | Salvin-Godman Coll.         |
| r¹. ♂ ad. sk.                              | Teapa, Feb. ( <i>D. W. Smith</i> ).                                               | Salvin-Godman Coll.         |
| s¹. Juv. sk.                               | Acapulco ( <i>A. H. Markham</i> ).                                                | Salvin-Godman Coll.         |
| t¹. ♂ ad. sk.                              | La Antigua, Vera Cruz, Sept.<br>( <i>M. Trujillo</i> ).                           | Salvin-Godman Coll.         |



|                                                                                                               |                                                             |                        |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|------------------------|
| <i>u</i> <sup>4</sup> . ♀ juv. sk.                                                                            | Vega del Cazadero, Vera Cruz, Dec. ( <i>M. Trujillo</i> ).  | Salvin-Godman Coll.    |
| <i>v</i> <sup>4</sup> - <i>x</i> <sup>4</sup> . ♂ ad. sk.                                                     | Tampico, Feb., March, June ( <i>W. B. Richardson</i> ).     | Salvin-Godman Coll.    |
| <i>y</i> <sup>4</sup> - <i>d</i> <sup>5</sup> . Ad.; <i>e</i> <sup>5</sup> , <i>f</i> <sup>5</sup> . Juv. sk. | Cozumel Island ( <i>G. F. Gummer</i> ).                     | Salvin-Godman Coll.    |
| <i>g</i> <sup>4</sup> . Ad. sk.                                                                               | Belize, British Honduras ( <i>F. Blancaneaux</i> ).         | Salvin-Godman Coll.    |
| <i>h</i> <sup>5</sup> , <i>i</i> <sup>5</sup> . Ad. et juv. sk.                                               | Dueñas, Guatemala ( <i>O. Salvin</i> ).                     | Salvin-Godman Coll.    |
| <i>k</i> <sup>5</sup> . Ad. sk.                                                                               | Coban, Vera Paz, Jan. ( <i>O. S.</i> ).                     | Salvin-Godman Coll.    |
| <i>l</i> <sup>5</sup> . Ad. sk.                                                                               | Chiapam, Sept. ( <i>O. S.</i> ).                            | Salvin-Godman Coll.    |
| <i>m</i> <sup>5</sup> . Juv. sk.                                                                              | Honduras.                                                   | Mr. C. Dyson [C.].     |
| <i>n</i> <sup>5</sup> , <i>o</i> <sup>5</sup> . ♀ ad. et ♂ juv. sk.                                           | Escondido River, Nicaragua, Dec. ( <i>C. W. Richmond</i> ). | Salvin-Godman Coll.    |
| <i>p</i> <sup>5</sup> . ♂ juv. sk.                                                                            | Peje, Costa Rica, Feb. 20 ( <i>J. Carmiol</i> ).            | Salvin-Godman Coll.    |
| <i>q</i> <sup>5</sup> . ♀ juv. sk.                                                                            | Punta Arenas, Costa Rica, Jan. ( <i>J. M. Dore</i> ).       | Salvin-Godman Coll.    |
| <i>r</i> <sup>5</sup> , <i>s</i> <sup>5</sup> . ♀ ad. et juv. sk.                                             | Lion Hill, Panama ( <i>J. McLeannan</i> ).                  | Salvin-Godman Coll.    |
| <i>t</i> <sup>5</sup> . Ad. sk.                                                                               | Balzar Mountains, Ecuador ( <i>Illingworth</i> ).           | Salvin-Godman Coll.    |
| <i>u</i> <sup>5</sup> . Ad. sk.                                                                               | Puna Island.                                                | G. Barclay, Esq. [P.]. |
| <i>v</i> <sup>5</sup> . Juv. sk.                                                                              | Venezuela.                                                  | Salvin-Godman Coll.    |
| <i>w</i> <sup>5</sup> - <i>y</i> <sup>5</sup> . Ad. sk.                                                       | Bahia, Brazil ( <i>Dr. Wucherer</i> ).                      | Salvin-Godman Coll.    |
| <i>z</i> <sup>5</sup> , <i>a</i> <sup>6</sup> . ♂ hiem. sk.                                                   | S. Vincent, Sept., Feb. ( <i>D. W. Smith</i> ).             | Salvin-Godman Coll.    |
| <i>b</i> <sup>6</sup> - <i>n</i> <sup>4</sup> ♂ ♀ ad. et imm. sk.                                             | Grenada, W. Indies, Feb. to Nov. ( <i>D. W. Smith</i> ).    | Salvin-Godman Coll.    |
| <i>o</i> <sup>6</sup> . ♀ ad. sk.                                                                             | Grenadines, W. I., May 29 ( <i>D. W. S.</i> ).              | Salvin-Godman Coll.    |

## 6. MELANOPHOYX.

Type.

*Melanophoyx*, *Sharpe*, *Bull. Brit. Orn. Club*, iii. p. xxxviii (1894) ..... *M. ardesiaca*.

*Range*. Confined to Africa.

*Key to the Species.*

- a*. Throat and under surface of body entirely slaty black ..... *ardesiaca*, p. 104.  
 . Upper throat vinous rufous; underparts slaty grey, or slightly washed with vinous ..... *vinaceigula*, p. 105.

1. *Melanophoyx ardesiaca*.

*Ardea ardesiaca*, *Wagl. Syst. Av.*, *Ardea*, p. 189, sp. 20 (1827: Senegambia); *Gray, Gen. B.* iii. p. 566 (1847); *Gutrin, Rev. et Mag. de Zool.* 1853, p. 291; *Hartl. Orn. W.-Afr.* p. 222 (1857: Senegal); *Schl. Mus. Pays-Bas*, *Ardeo*, p. 10 (1865); *Schl. & Poll. Faun. Madag.*, *Ois.* p. 122 (1868); *Finsch & Hartl. Vög. Ostaf.* p. 682 (1870); *Gray, Hand-b. B.* iii. p. 29, no. 10123 (1871); *Ayres, Ibis*, 1871, p. 264 (Potchefstroom); *Gurney, l. c.* p. 264; *Reichen. J. f. O.* 1877, p. 261; *Hartl. Vög. Madag.* p. 300 (1877);

- Ayres, Ibis*, 1878, p. 299; *Milne-Edw. & Grandid. Hist. Nat. Madag., Ois.* p. 547, pl. ccxxv. (1877-81); *Bocage, Orn. Angola*, p. 440 (1881: Rio Coroca; Humbe); *Sibree, Ibis*, 1892, p. 18; *Reichen. Vög. Deutsch-Ost-Afr.* p. 65 (1894: Bagamoyo); *Shelley, Ibis*, 1894, p. 27 (Lake Shirwa).
- Ardea calceolata*, *Du Bus, Bull. R. Acad. Brux.* iv. p. 40, pl. 2 (1838: Gulf of Guinea); *Less. Compl. Buff.* ix. p. 457 (1837); *Gray, Gen. B.* iii. p. 556 (1847); *Hartl. Orn. W.-Afr.* p. 222 (1857: Guinea); *id. J. f. O.* 1861, p. 269 (Keta, Slave Coast).
- Ardea flavimana*, *Sundev. Öfv. K. Vet.-Akad. Förh. Stockh.* 1850, p. 111; *Layard, B. S. Afr.* p. 307 (1867).
- Herodias ardesiaca*, *Hartl. J. f. O.* 1854, pp. 290, 510, 513; *Bp. Consp.* ii. p. 122 (1855); *Heugl. Syst. Uebers.* p. 58 (White Nile).
- Herodias calceolata*, *Hartl. J. f. O.* 1854, pp. 290, 510, 513; *Bp. Consp.* ii. p. 123 (1855); *Kirk, Ibis*, 1864, p. 333.
- Egretta concolor*, *Heugl. Syst. Uebers.* p. 58 (1856: Sobat River).
- "*Ardea puella, Württ.*" *teste Heugl. J. f. O.* 1867, p. 303.

**Adult male.** General colour above and below dark slaty black, the long ornamental feathers of the back and scapulars, as well as those on the fore-neck, clearer slaty grey; fore part of crown clearer slate-colour, the hinder crown with a beautiful ornamental crest of slaty black feathers, these being lanceolate and elongated; the primaries shaded with slaty grey; breast and abdomen clearer slate-colour: "bill black; tarsi and feet dull greenish yellow, bare part of thighs ashy; iris bright yellow" (*T. Ayres*). Total length 17.5 inches, culmen 2.6, wing 9.7, tail 3.6, tarsus 3.1.

**Young.** Similar to the adult, but without the ornamental plumes on the crest or fore-neck; the upper surface blacker, and without the long plumes of slaty grey; throat black like the rest of the under surface; tibiae and tarsi black; toes yellow.

**Hab.** The greater part of Tropical Africa.

|               |                                                     |                                 |
|---------------|-----------------------------------------------------|---------------------------------|
| a. ♂ ad. sk.  | Potchefstroom, Feb. 27 ( <i>T. Ayres</i> ).         | Gurney Coll.                    |
| b. ♂ juv. sk. | Potchefstroom ( <i>F. A. Barratt</i> ).             | Sharpe Coll.                    |
| c. Juv. sk.   | Lower Shiré Valley ( <i>Sir J. Kirk</i> ).          | Livingstone Expedition.         |
| d, e. Ad. sk. | Lake Shirwa, Nyassa-land, Dec. ( <i>A. Whyte</i> ). | H. H. Johnston, Esq. C.B. [P.]. |

## 2. *Melanophoyx vinaceigula*. (Plate I. A.)

*Ardea ardesiaca*, pt., *Gurney, Ibis*, 1871, p. 264; *Sharpe, ed. Layard's B. S. Afr.* p. 713 (1884).

**Adult male.** Similar to *M. ardesiaca*, but having the throat vinous red: "tarsi and feet greenish grey" (*T. Ayres*). Total length 16.5 inches, culmen 2.25, wing 9, tail 3.65, tarsus 3.05.

Two specimens of this apparently undescribed species are in the Museum, where they have been considered to be the young of *A. ardesiaca*. This, however, cannot be the case, because we have a veritable young bird of the latter also in the Collection, and it not only has the throat black, but the toes yellow, as in the adults.

Both examples of *M. vinaceigula* are adult birds with well-developed crests and præpectoral plumes, as well as ornamental plumes on the back. One of them has the breast and abdomen washed with vinous, and in addition to the upper throat, the centre of the lower throat and some of the long præpectoral feathers are also vinous.

*Hab.* Transvaal.

a. Ad. sk. Transvaal (*T. Ayres*). Gurney Coll.  
b. ♂ ad. sk. Potchefstroom, May 30 (*T. Ayres*). F. A. Barratt, Esq. [C.]

## 7. DICHROMANASSA.

|                                                               |                                                                          |
|---------------------------------------------------------------|--------------------------------------------------------------------------|
|                                                               | Type.                                                                    |
| <i>assa, Ridgw. Bull. U.S. Geol. &amp; Geogr. Surv. Terr.</i> | D. rufa.                                                                 |
| <i>&amp; Reichen. Nomencl. Mus.</i>                           | D. rufa.                                                                 |
| <i>rnif States of Central Ame</i>                             | America, north to Southern Illinois, as far as Guatemala. Jamaica; Cuba. |

### 1. *Dichromanassa rufa*.

? Little White Heron, *Catesby, Nat. Hist. Carol.* i. p. 77, pl. 77 (1731); *Lath. Gen. Syn.* iii. pt. 1, p. 93 (1785).  
? Le Héron blanc de la Caroline, *Briss. Orn.* v. p. 435 (1760).  
? *Ardea squinotialis*, *Linn. Syst. Nat.* i. p. 240 (1766)\*.  
*L'Aigrette rousse de la Louisiane, D'Aubert. Pl. Enl.* viii. pl. 902.  
*L'Aigrette rousse, Buff. Hist. Nat. Ois.* vii. p. 378 (1780).  
*Ardea rufa, Bodd. Tabl. Pl. Enl.* p. 54 (1783); *Gray, Gen. B.* iii. p. 555 (1847); *Schl. Mus. Pays-Bas, Ardeæ*, p. 21 (1863); *Gray, Hand-l. B.* iii. p. 29, no. 10128 (1871); *Coues, Key N. Amer. B.* p. 268 (1872); *Sci. & Salv. Nomencl. Av. Neotr.* p. 125 (1873); *Reichen. J. f. O.* 1877, p. 269; *Maynard, B. East. N. Amer.* p. 412 (1879); *Cory, B. Bahamas*, p. 170 (1880); *id. Bull. Nutt. Orn. Club*, vi. p. 154 (1881); *A. & E. Newton, Handb. Jamaica*, p. 111 (1881); *Boucard, P. Z. S.* 1883, p. 458 (Yucatan); *Cory, B. San Domingo*, p. 152 (1885); *id. List B. West Ind.* p. 28 (1885); *A. O. U. Check-l. N. Amer. B.* p. 136 (1886); *Ridgw. Man. N. Amer. B.* p. 131 (1887); *Cory, Auk*, iv. p. 325 (1887: Bahamas & Antilles); *Scott, Auk*, v. p. 184 (1888: Florida); *Cory, B. West Ind.* p. 246 (1889); *id. B. Bahamas*, 2nd ed. p. 170 (1890).  
Reddish Egret, *Lath. Gen. Syn.* iii. pt. 1, p. 88 (1785).  
*Ardea rufescens, Gm. Syst. Nat.* i. p. 628 (1788); *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 408 (1817); *Audub. B. Amer.* pl. cclvi. (c. 1826); *id. Orn. Biogr.* iii. p. 411 (1835); *id. B. Amer.* 8vo, vi. p. 139, pl. 371 (1843); *Lembeye, Av. Cuba*, p. 83, (1850); *Beckham, Proc. U.S. Nat. Mus.* x. p. 636 (1887: Bexar Co.; Texas), p. 649 (San Antonio); *Scott, Auk*, v. p. 184 (1888: Gulf Coast of Florida); *Northrop, Auk*, viii. p. 77 (1891: Andros Isl.); *Cory, t. c.* p. 296 (Caicos Isl.); *Ridgw. t. c.* p. 335 (Abaco); *Scott, Auk*, ix. p. 10

\* This name is founded on Catesby's "Little White Heron," which is said to have a red bill. The only bird answering to this description seems to me to be the Reddish Egret (*D. rufa*).

- (1892: Jamaica); *Cory, Cat. B. West Ind.* p. 89 (1892); *Allen, Auk*, x. p. 132 (1893).
- Ardea pealei*, *Bp. Ann. Lyc. N. Y.* ii. p. 154 (1826); *id. B. Amer.* iv. p. 96, pl. 26. fig. 1 (1833); *Less. Traité d'Orn.* p. 574 (1831); *Gray, Hand-l. B.* iii. p. 29, no. 10127 (1871); *Ridgw. Man. N. Amer. B.* p. 131 (1887).
- Egretta pealei*, *Bp. Obs. Cuv. Règne An.* p. 100 (1830).
- Egretta rufescens*, *Bp. Comp. List B. Eur. & N. Amer.* p. 47 (1838).
- Herodias rufescens*, *Gray, List Grall. Brit. Mus.* p. 79 (1844); *Bp. Consp. Av.* ii. p. 123 (1855); *Brewer, Proc. Bost. Soc. N. H.* vii. p. 308 (1860: Cuba); *Gundl. J. f. O.* 1862, p. 82 (Cuba).
- Ardea cubensis*, *Lembeye, Av. Cuba*, p. 84, pl. 13. fig. 1 (1850), *ex Gundl. MSS.*
- Demiegretta pealei*, *Baird, B. N. Amer.* p. 661 (1858); *March, Proc. Philad. Acad.* 1864, p. 63 (Jamaica); *Dresser, Ibis*, 1866, p. 31 (Texas); *Salvin, t. c.* p. 196 (Guatemala); *Gundl. Repert. Fisico-Nat. Cuba*, i. p. 348 (1866); *Allen, Bull. Mus. C. Z.* ii. p. 358 (1871: Florida); *Gundl. J. f. O.* 1875, p. 301 (Cuba); *id. Orn. Cubana*, p. 149 (1876); *Laur. Bull. U.S. Nat. Mus.* iv. p. 49 (1876: Tehuantepec).
- Demiegretta rufa*, *Baird, B. N. Amer.* p. 662 (1858); *Dresser, Ibis*, 1866, p. 31 (Texas); *Salvin, t. c.* p. 196 (Guatemala); *Gundl. Repert. Fisico-Nat. Cuba*, i. p. 348 (1866); *Laur. Mem. Bost. Soc. N. H.* ii. p. 310 (1874: Mazatlan); *Gundl. J. f. O.* 1875, p. 302 (Cuba); *Laur. Bull. U.S. Nat. Mus.* iv. p. 49 (1876: Tehuantepec).
- Herodias pealii*, *Brewer, Proc. Bost. Soc. N. H.* vii. p. 308 (1860: Cuba); *Gundl. J. f. O.* 1862, p. 82 (Cuba).
- Ardea rufa*, var. *pealei*, *Reichen. J. f. O.* 1877, p. 270.
- Dichromanassa rufa*, *Ridgw. Bull. U.S. Geol. & Geogr. Surv. Terr.* iv. no. 1, p. 236 (1878); *Sennett, Bull. U.S. Geol. Surv.* iv. p. 60 (1878: Corpus Christi Pass); *Ridgw. Proc. U.S. Nat. Mus.* iii. p. 10 (1880); *Coues, Check-l. N. Amer. B.* p. 107 (1882); *Belding, Proc. U.S. Nat. Mus.* v. pp. 544, 548 (1883: Lower California); *Baird, Brewer, & Ridgw. Water-Birds N. Amer.* i. p. 33 (1884); *Coues, Key N. Amer. B.* 2nd ed. p. 661 (1884).
- Hydranassa rufa*, *Heine & Reichen. Nomencl. Mus. Hein.* p. 306 (1890).

**Adult male.** General colour above light slaty grey, with a hoary gloss on the ornamental breeding-plumes of the back and scapulars, the long scapular plumes whity brown at their ends; wings and tail dark slaty grey; head and neck all round vinaceous cinnamon, the long ornamental plumes more or less glossed with lilac, and the elongated feathers of the fore-neck with paler ends; remainder of under surface light slaty grey, including the under wing-coverts and axillaries: "terminal half of bill black, basal half including the eyes and eyelids pale flesh; tarsi ultramarine-blue, the scutellæ and claws black; iris yellow or white" (*J. J. Audubon*). Total length 26 inches, culmen 4, wing 13·5, tail 4·5, tarsus 5·8, middle toe and claw 3·2.

**Adult female.** Similar to the male in colour, slightly smaller, but the ornamental plumes not quite so much developed. Total length about 26 inches, culmen 3·8, wing 12, tail 3·9, tarsus 5·1, middle toe and claw 3·1.

*Young.* General colour bluish grey, lighter and more pearly grey below; the feathers of the upper surface with broad whity-brown tips and the breast-feathers washed with vinous, as also the neck; the throat and centre of fore-neck clear vinous. Some young birds are much more rufous than others and have the throat and sides of the face very strongly washed with cinnamon, a shade of which is also apparent on the crown.

In the 'Water-Birds of North America' Messrs. Baird, Brewer, and Ridgway have reviewed the remarkable facts connected with the two phases of colour of this Heron. Audubon believed the white bird to be the young of the rufous bird; but this seems to be disproved at once by the Texan birds in the Museum, which have fully-developed breeding-plumes in the white phase as well as in the rufous. The above-named authors write:—"In Florida, where *A. pealei* (white phase) and *A. rufa* breed abundantly, both forms have been found in the *same nest* attended by parents either both reddish, both white, or one in each of these stages of plumage; other circumstances at the same time leading irresistibly to the conclusion that the two phases are not only specifically distinct, but that they have nothing to do with sex, age, or season." In the Salvin-Godman Collection there is a specimen from Cozumel which is in the full plumage of *D. rufa*, but has one of the quills white. Mr. Salvin shot a specimen at Chiapam which has the whole of the neck hoary whitish, but this may be due to the presence of young feathers. Most of the immature birds have a good deal of white at the base of the quills.

*Hab.* The same as that of the genus.

a. *Grey phase.*

|                              |                                                 |                     |
|------------------------------|-------------------------------------------------|---------------------|
| a, b. ♂ ad.; c-i. ♀ ad. sk.  | Tarpon Springs, Florida, May (W. E. D. Scott).  | Salvin-Godman Coll. |
| k, l. ♂ ad. sk.              | Corpus Christi, Texas, March (F. B. Armstrong). | Salvin-Godman Coll. |
| m. ♂ ad. sk.                 | Brownsville, May (F. B. Armstrong).             | Salvin-Godman Coll. |
| n. ♀ ad. sk.                 | Aransas Bay, June (F. B. Armstrong).            | Salvin-Godman Coll. |
| o. ♀ ad.; p, q. ♂ ♀ juv. sk. | Presidio, Mexico, Dec., Jan. (A. Forrer).       | Salvin-Godman Coll. |
| r. Ad. st.                   | Mexico.                                         | Purchased.          |
| s-y. Ad.; z-f'. Juv. sk.     | Cozumel Island (G. F. Gaumer).                  | Salvin-Godman Coll. |
| g'. ♀ ad. sk.                | Istan, Guatemala, Jan. 1863 (O. S.).            | Salvin-Godman Coll. |
| h'. Juv. sk.                 | Chiapam, Guatemala (O. S.).                     | Salvin-Godman Coll. |

b. *White phase.*

|                           |                                                   |                           |
|---------------------------|---------------------------------------------------|---------------------------|
| a. Ad. st.                | North America.                                    | J. J. Audubon, Esq. [P.]. |
| b. ♀ ad. sk.              | Punta Russa, Florida, May 10 (W. E. D. Scott).    | Salvin-Godman Coll.       |
| c, d. ♂ ad.; e. ♀ ad. sk. | Brownsville, Texas, April, May (F. B. Armstrong). | Salvin-Godman Coll.       |

|                                   |                                       |                     |
|-----------------------------------|---------------------------------------|---------------------|
| <i>f, g, h.</i> ♂ ad. ; <i>i.</i> | Corpus Christi, May, Aug. ( <i>F.</i> | Salvin-Godman Coll. |
| ♀ ad. sk.                         | <i>B. Armstrong</i> ).                |                     |
| <i>k.</i> Ad. sk.                 | Cozumel Island, June ( <i>G. F.</i>   | Salvin-Godman Coll. |
|                                   | <i>Gaumer</i> ).                      |                     |
| <i>l, m.</i> Ad. sk.              | Chiapam, Guatemala, Jan.              | Salvin-Godman Coll. |
|                                   | ( <i>O. S.</i> ).                     |                     |

## 8. NOTOPHOYX.

*Range.* Australia, probably to New Guinea, and certainly to New Zealand, New Caledonia, the Loyalty Islands, and the Moluccas.

*Key to the Species.*

- a.* Size larger: bill black, lighter on the lower mandible.
  - a'.* No white streaks on the breast and abdomen; axillaries grey or vinaceous grey; elongated dorsal plumes grey, with no maroon feathers; sides of chest vinaceous; head and neck grey, the forehead, eyebrow, and throat white ..... *novæ hollandiæ*, p. 109.
  - b'.* Breast and abdomen with large lanceolate streaks of white; axillaries slaty blackish like the under wing-coverts; many of the elongated dorsal feathers maroon with slaty-grey ends; a large maroon patch of feathers on the side of the chest; head and neck vinaceous or white, with some black markings on the lower throat .... *pacifica*, p. 111.
- b.* Size small: entire bill yellow.
  - c'.* Crown, crest, and sides of face black; cheeks, throat, and neck white ..... *picata*, p. 112.
  - d'.* Head and neck all round, as well as the entire under surface of the body, white . *aruensis*, p. 113.

1. *Notophoyx novæ hollandiæ*.

White-fronted Heron, *Phillip, Voy. Bot. Bay*, p. 163 cum tab. (1789: Port Jackson); *Lath. Gen. Syn. Suppl.* ii. p. 304.  
*Ardea novæ hollandiæ*, *Lath. Ind. Orn.* ii. p. 701 (1790); *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 417 (*nec* 436) (1817); *Stephens in Shaw's Gen. Zool.* xi. pt. 2, p. 561 (1819); *S. Müll. Verh. Land- en Volkenk.* p. 110 (1839-44: Moluccas); *Gould, B. Austr.* vi. pl. 53 (1847); *Gray, Gen. B.* iii. p. 556 (1847); *Reichenb. Vög. Neuhol.* p. 36 (1849); *id. Grall. Novit.* tab. 154. figs. 2398-99 (1850); *Macgill. Narr. Voy. Rattlesn.* ii. p. 358 (1852: N.E. coast Australia); *Schl. Mus. Pays-Bas, Ardeæ*, p. 28 (1863: Australia; Timor; Sumbawa); *Gould, Handb. B. Austr.* ii. p. 299 (1865); *Finsch, New-Guinea*, p. 183 (1865); *Schl. Nederl. Tijdschr. Dierk.* iii. p. 348 (1866: Aru; Little Kei; Manuvolka); *Hutton, Ibis*, 1870, p. 394 (Manukan Harbour); *Gray, Hand-l. B.* iii. p. 28, no. 10117 (1871); *Buller, B. New Zeal.* p. 231, pl. 24. fig. 2 (1873); *Pelz. Ibis*, 1873, p. 120; *Finsch, J. f. O.* 1874, p. 195 (New Zealand); *Rosenb. Reist. naar Geelvinkb.* p. 118 (1875); *Reichen. J. f. O.*

1877, p. 263; *Ramsay, P. Z. S.* 1877, p. 341 (Queensland); *id. Proc. Linn. Soc. N. S. W.* ii. p. 198 (1878); *Rosenb. Malay. Archip.* p. 373 (1878-79: Aru; Goram), p. 563 (New Guinea); *Salvad. Ann. Mus. Genov.* xiv. p. 667 (1879), xviii. p. 332 (1882); *id. Orn. Papuasia etc.* iii. p. 342 (1882); *Meyer, Zeitschr. ges. Orn.* i. pp. 196, 216 (1884: Timor Laut); *Ramsay, Proc. Linn. Soc. N. S. W.* (2) i. pp. 1096, 1164 (1887: Derby, N.W. Austr.); *id. op. cit.* ii. p. 172 (1888); *id. Tab. List Austr. B.* p. 21 (1888: nearly the whole of Australia & Tasmania); *Buller, B. New Zeal.* 2nd ed. ii. p. 134 (1888); *North, Proc. Linn. Soc. N.S.W.* (2) iii. p. 1778 (1889: Cumberland Co., N.S.W.); *id. Nests & Eggs Austr. B.* p. 318 (1889); *Cox & Hamilton, Proc. Linn. Soc. N.S.W.* (2) iv. p. 420 (1890: Mudgee distr., breeding); *North, t. c.* p. 1025 (Roeburne); *Salvad. Agg. Orn. Papuasia*, iii. p. 205 (1891); *North, Proc. Linn. Soc. N. S. W.* (2) viii. p. 238 (1894: Norfolk Island); *Meyer & Wiglesw. Abh. k. zool. Mus. Dresden*, 1894-95, no. 4, p. 2 (1894: Kema).

*Ardea leucops*, *Wagl. Syst. Av.*, *Ardea*, p. 181, sp. 17 (1827).

*Herodias novæ hollandiæ*, *Gray, List Grall. Brit. Mus.* p. 80 (1844); *Bp. Conspect. Av.* ii. p. 120 (1855); *id. C. R.* xl. p. 722 (1855); *Verr. et Des Murs, Rev. et Mag. de Zool.* 1860, p. 436 (New Caledonia); *Marie, Act. Soc. Linn. Bord.* xxvii. p. 328 (1870: N. Caledonia); *E. L. & L. L. C. Layard, Ibis*, 1880, p. 232 (Loyalty Isl.).

*Egretta novæ hollandiæ*, *Licht. Nomencl. Av. Mus. Berol.* p. 89 (1854: Australia).

*Demiegretta novæ hollandiæ*, *Meyer, Verh. z.-b. ges. Wien*, 1881, p. 767 (Sumba).

**Adult male.** General colour above slaty grey, with long ornamental lanceolate plumes on the back and scapulars; lower back, rump, and upper tail-coverts lighter slaty grey; wing-coverts entirely slaty grey, as also the inner secondaries, the latter being pointed at the ends; bastard-wing, primary-coverts, and quills black, shaded with slaty grey; head and neck darker slate-colour, inclining to black on the crown, the nape-feathers forming an elongated crest; forehead, eyebrow, feathers behind the eye, cheeks, and throat white, the latter ending in a point; ear-coverts dusky grey like the sides of the neck and lower throat; the plumes of the fore neck greatly elongated and lanceolate and of a vinous tint; the long feathers at the sides of the upper breast grey, with vinous tips; abdomen, thighs, and vent pale vinous isabelline; the sides of the body, under tail-coverts, under wing-coverts, and axillaries light grey with a slight vinous tinge: "orbits and base of bill in some pale grey, in others deep lead-colour; base of lower mandible flesh-colour; iris in some lead-colour, in others yellow, in others pale buff" (*J. Gould*). Total length about 26 inches, culmen 3.15, wing 12.5, tail 5.2, tarsus 3.75.

**Young.** Differs from the adult in being uniform grey above, many of the feathers with light brown at the ends, the head uniform grey like the back, the eyebrow and sides of face light ashy, the cheeks and upper throat white; the rest of the under surface as in the adult, but without the long ornamental plumes on the fore-neck.

Considerable difference exists in a series of specimens with regard to the colour of the face, some having the whole of the face white, including the ear-coverts and greater part of the crown. As far



as I can judge, the differences are individual, as both white and black-eared birds occur in the same locality. It may be that the white-eared birds are very old individuals.

*Hab.* Australia to the Celebes and the Moluccas, probably to New Guinea; New Caledonia; Loyalty Islands; New Zealand.

|                          |                                                |                             |
|--------------------------|------------------------------------------------|-----------------------------|
| a. Ad. sk.               | Spring Bay, Tasmania.                          | Maitland Somerville, Esq.   |
| b. ♂ ad. sk.             | Tasmania, April 23.                            | Hume Coll.                  |
| c. Ad. sk.               | Australia.                                     | Gould Coll.                 |
| d. Ad. sk.               | Australia.                                     | Hume Coll.                  |
| e, f, g. Ad. et juv. sk. | New South Wales.                               | Imperial Institute [P.]     |
| h, i. Ad. et juv. sk.    | New South Wales.                               | Australian Museum [P.]      |
| k. Ad. st.               | New South Wales.                               | Australian Museum [P.]      |
| l, m. Ad. sk.            | South Australia ( <i>J. Gould</i> ).           | Sir G. Grey [P.]            |
| n. Ad. sk.               | South Australia.                               | C. D. E. Fortnum, Esq. [P.] |
| o, p. Ad. sk.            | Queensland ( <i>J. T. Cockerell</i> ).         | Salvin-Godman Coll.         |
| q. ♂ ad. sk.             | E. Timor.                                      | Wallace Coll.               |
| r, s. Ad. st.            | E. Timor.                                      | Wallace Coll.               |
| t. ♀ ad. sk.             | N. Caledonia, Nov. 13 ( <i>E. L. Layard</i> ). | Seebohm Coll.               |

## 2. *Notophoyx pacifica*.

Pacific Heron, *Lath. Gen. Syn. Suppl.* ii. p. 305 (1801: Australia).  
*Ardea pacifica*, *Lath. Ind. Orn. Suppl.* p. lxx (1801); *Jard. & Selby, Ill. Orn.* pl. 90 (1830); *Gray, List Grall. Brit. Mus.* p. 77 (1844: S. Australia; W. Australia; King George's Sound); *id. Gen. B.* iii. p. 555 (1847); *Gould, B. Austr.* vi. pl. 52 (1847); *Reichenb. Vög. Neuholl.* p. 35, no. 324 (1849); *id. Grall.* tab. 154. fig. 2400 (1849); *Bp. Consp. Av.* ii. p. 112 (1855); *Gray, P. Z. S.* 1858, p. 197 (N. Australia); *Schl. Mus. Pays-Bas, Ardeæ*, p. 7 (1863: Australia; Tasmania); *Gould, Handb. B. Austr.* ii. p. 297 (1865); *Gray, Hand-l. B.* iii. p. 27, no. 10101 (1871); *Reichen. J. f. O.* 1877, p. 263; *Ramsay, Proc. Linn. Soc. N. S. W.* i. p. 191 (1877); *Casteln. & Ramsay, t. c.* p. 386 (Norman River, Gulf of Carpentaria) *Ramsay, op. cit.* ii. p. 198 (1878: Australia generally); *Bennett, Proc. Linn. Soc. N. S. W.* vii. pp. 324-328 (1883); *Ramsay, op. cit.* (2) i. p. 1100 (1887; Derby, N.W. Australia), (2) ii. p. 172 (1888); *id. Tab. List Austr. B.* p. 21 (1888: the whole of Australia except Cape York, and Tasmania); *North, Proc. Linn. Soc. N. S. W.* (2) iii. p. 1178 (1889: Cumberland Co., N. S. W.); *id. Nests & Eggs Austr. B.* p. 317 (1889); *Cox & Hamilton, Proc. Linn. Soc. N. S. W.* (2) iv. p. 420 (1890: Mudgee Distr.).

*Ardea bullaragang*, *Wagl. Syst. Av.*, *Ardea*, p. 175, sp. 5 (1827).

*Adult male.* General colour above glossy olive-green, the long ornamental feathers slaty grey; the scapular plumes maroon, with slaty-grey tips; lower back, rump, and upper tail-coverts slaty grey, glossed with olive-green; wing-coverts glossy green, all those round the tip of the wing white, as also the edge of the wing; the primary-coverts and primary-quills blackish, externally slaty grey; secondaries glossy green; tail-feathers dark slate-colour, blackish towards the ends; head and neck pale vinous isabelline; throat white in the

centre, with a few black spots, the feathers of the fore-neck elongated and pointed, with white at the ends: remainder of under surface blackish, with broad longitudinal streaks of white; sides of body and flanks, as well as the under wing-coverts and axillaries, uniform dark slate-colour; on each side of the upper breast a patch of dark maroon feathers, some of them mesially streaked with white: "upper mandible black, lower part of under mandible yellowish olive in some specimens and yellowish horn-colour in others; upper part of tarsi yellowish olive, feet black; orbits greenish yellow, becoming more yellow immediately before and round the eye; iris in some specimens rich primrose-yellow, and in others very dark brown" (*J. Gould*).

*Winter plumage.* More green above than in the full plumage, and not showing the slaty-grey ornamental plumes or maroon scapulars characteristic of the latter.

*Young.* More dingy in colour than the adults, the head grey, and the neck thickly spotted with black; under surface dusky grey, streaked with white in the centre of the body.

Mr. Gould mentions that some specimens of this Heron have the neck wholly white. One such bird is in the Museum Collection, and I think it probable that this may be the dimorphic form of the species.

*Hab.* Australia.

|                      |                                                         |                            |
|----------------------|---------------------------------------------------------|----------------------------|
| <i>a, b.</i> Ad. sk. | New South Wales.                                        | Imperial Institute [P.]    |
| <i>c.</i> Juv. sk.   | S. Australia.                                           | Sir George Grey [P.]       |
| <i>d, e.</i> Ad. sk. | Depot, interior of Australia,<br>lat. 29° 40', May.     | Capt. Sturt [P.]           |
| <i>f, g.</i> Ad. sk. | Queensland ( <i>J. T. Cockerell</i> ).                  | Salvin-Godman Coll.        |
| <i>h.</i> Ad. sk.    | N.W. Australia ( <i>T. H.</i><br><i>Bowyer Bower</i> ). | Capt. Bowyer Bower<br>[P.] |

### 3. *Notophoxyx picata*.

*Ardea* (*Herodias*) *picata*, *Gould*, *P. Z. S.* 1845, p. 62 (Port Essington).

*Herodias picata*, *Gould*, *B. Austr.* vi. pl. 62 (1846); *Reichenb. Vög. Neuhol.* p. 38 (1849); *Bp. Consp. Av.* ii. p. 120 (1855); *id. C. R.* xl. p. 722 (1855); *Gould, Handb. B. Austr.* ii. p. 306 (1865); *Ramsay, Proc. Linn. Soc. N. S. W.* i. p. 192 (1877: N. Australia), ii. p. 199 (1878: Port Darwin; Port Essington; Gulf of Carpentaria); *id. Tab. List Austr. B.* p. 21 (1888).

*Ardea picata*, *Gray, Gen. B.* iii. App. p. 25 (1849); *id. P. Z. S.* 1858, p. 197; *id. Cat. Mamm. & B. New Guin.* p. 63 (1859); *Schl. Mus. Pays-Bas, Ardeæ*, p. 10 (1863: Port Essington); *Finsch, Neu-Guinea*, p. 183 (1865: N. Australia; Port Essington; Torres Straits); *Gray, Hand-l. B.* iii. p. 28, no. 10118 (1871); *Reichen, J. f. O.* 1877, p. 262; *Roscnb. Malay. Archip.* p. 278 (1878-79: Celebes), p. 373 (Aru Isl.); *D'Alb. Ann. Mus. Gen.* xiv. p. 131 (1879: Fly R.); *Schl. Notes Leyd. Mus.* i. p. 114 (1879: Australia; Amboina; Celebes); *Salvad. Ann. Mus. Gen.* xviii. p. 332 (1882); *id. Orn. Papuaia etc.* iii. p. 343 (1882); *Büttik. Notes Leyd. Mus.* viii. p. 67 (1886: Tenimber Isl.); *Salvad. Agg. Orn. Papuaia*, iii. p. 206 (1891).

*Agamia picta* (pt.), *Reichenb. Av. Syst. Nat.* p. xvi, tab. xxxii. figs. 2401-2402 (1852).

**Adult.** General colour above slaty black, with the long ornamental plumes on the back and scapulars clearer slate colour; wings and tail slaty black; quills clearer slaty black externally; crown of head, including the long ornamental nuchal plumes, the feathers of the hind-neck, and sides of neck slaty black; cheeks and a collar round the hind-neck, as well as the entire throat and fore-neck, white; the feathers on the fore-neck elongated and pointed, and where they join the black ornamental feathers on the sides of the neck they are parti-coloured, being white in the middle, with the margins blackish slate-colour; remainder of under surface, from the fore-neck downwards, including the under wing-coverts and axillaries, blackish slate-colour: "bill, legs, and feet greenish yellow; iris yellow" (*J. Gould*). Total length 19 inches, culmen 2.55, wing 8.7, tail 3, tarsus 2.8.

**Young.** Differs from the adult in being browner, and with scarcely any ornamental plumes anywhere, the head dusky, the under surface also dusky, longitudinally streaked with white.

**Hab.** Northern Australia.

|                      |                     |                         |
|----------------------|---------------------|-------------------------|
| a. Ad. sk.           | Northern Australia. | Gould Coll.             |
| b-o. Ad. et imm. sk. | Northern Australia. | Salvin-Godman Coll.     |
| p. Ad. st.           | Port Essington.     | Capt. Chambers [P.].    |
| q. ♂ ad. sk.         | N.W. Australia.     | J. R. Elsey, Esq. [P.]. |

#### 4. *Notophoyx aruensis*. (Plate I. B.)

*Ardea aruensis*, *Gray, P. Z. S.* 1858, pp. 188, 197 (Aru Isl.); *id. Cat. Mamm. & B. New Guin.* pp. 51, 62 (1859); *id. P. Z. S.* 1861, p. 438 (Louisade Isl.); *Schl. Ned. Tijdschr. Dierk.* iii. p. 348 (1866); *Gray, Hand-l. B.* iii. p. 28, no. 10119 (1871); *Salvad. Ucc. Born.* p. 347 (1874); *Reichen. J. f. O.* 1877, p. 274; *Salvad. Ann. Mus. Genov.* xviii. p. 332 (1882); *id. Orn. Papuasias etc.* iii. p. 344 (1882).

*Herodias aruensis*, *Rosenb. Nat. Tijdschr. Nederl. Ind.* xxv. p. 253 (1863); *id. J. f. O.* 1864, p. 136 (New Guinea); *id. Reis naar Zuidoostereil.* p. 53 (1867).

? *Ardea landsbergi*, *Schl. Notes Leyd. Mus.* i. p. 113 (1879: Celebes).

**Adult male** (type of species). General colour above dingy slate-colour, browner on the lower back and rump; quills and tail black, with a small white spot at the end of all the inner secondaries; head and neck all round, as well as the entire under surface of body white; sides of body, flanks, thighs, under wing-coverts, and axillaries dull slate-colour; edge of wing conspicuously white. Total length 18.5 inches, culmen 2.4, wing 8.8, tail 3.2, tarsus 2.85.

This is the species evidently referred to by Gould in his 'Hand-book' as the young of *N. picata*, when he says:—"The young birds differ in having the whole of the under surface white." Neither of the specimens in the Museum appear to be immature, as they have full crests of white plumes, and further, we know that the young

of *N. picata* is different. There is a specimen in the Salvin-Godman collection, which shows that the young of that species is very like the adult (*vide supra*), and quite unlike *N. aruensis*, which I consider to be a good species.

*Hab.* Northern Australia to the Aru Islands and probably to Celebes.

- |              |                                    |                    |
|--------------|------------------------------------|--------------------|
| a. ♂ ad. sk. | Aru Islands.                       | Wallace Coll.      |
|              |                                    | (Type of species.) |
| b. Ad. sk.   | Port Darwin, N. Australia, August. | Gould Coll.        |

### 9. LEPTERODIUS.

- |                                                                     |             |
|---------------------------------------------------------------------|-------------|
| Lepterodas, <i>Hempr. &amp; Ehr. Symb. Phys.</i> fol. i. (1832)...  | Type.       |
| Lepterodius, <i>Heine &amp; Reichen. Nomencl. Mus. Hein.</i> p. 306 | L. gularis. |
| (1890) .....                                                        | L. gularis. |

*Range.* Confined to Africa.

#### *Key to the Species.*

- |                                                                                                    |                          |
|----------------------------------------------------------------------------------------------------|--------------------------|
| a. Smaller: culmen 3.0-3.3 inches; colour dark, blackish slate-colour .....                        | <i>gularis</i> , p. 114. |
| b. Larger: culmen 3.4-3.9 inches; colour light slaty grey, the decorative plumes pearly grey ..... | <i>asha</i> , p. 116.    |

#### 1. *Lepterodius gularis*.

*Ardea gularis*, *Bosc, Actes de la Société d'Hist. Nat. Paris*, i. p. 4, pl. 2 (1792); *Wagler, Syst. Av.*, Ardea, p. 181, sp. 19 (1827); *id. Isis*, 1829, p. 661; *Gray, Gen. B.* iii. p. 556 (1847); *Hartl. Orn. W.-Afr.* p. 220 (1857: Senegal; S. Thomas; Aguapim); *id. J. f. O.* 1861, p. 269 (S. Thomas); *Schl. Mus. Pays-Bas, Ardeæ*, p. 23 (1868: Rio Boutry; Red Sea); *Dohrn, P. Z. S.* 1866, p. 830 (Prince's Isl.); *Scl. t. c.* p. 425; *Hartl. P. Z. S.* 1867, p. 827 (Zanzibar); *Schl. & Poll. Faune Madag., Ois.* p. 123 (1868); *Finsch & Hartl. Vög. Ostaf.* p. 691 (1870); *Gray, Hand-l. B.* iii. p. 29, no. 10122 (1871); *Heugl. Orn. N.O.-Afr.* ii. pt. 1, p. 1059 (1873: Coast of Red Sea and Gulf of Aden, north to the bays of Akabah and Suez); *Antin. & Salvad. Viagg. Bogos*, p. 147 (1873: Massowa, April); *Hartl. Vög. Madag.* p. 299 (1877); *Reichen. J. f. O.* 1877, p. 270; *E. Newton, P. Z. S.* 1877, p. 302 (Mayotte); *Shelley, P. Z. S.* 1879, p. 678 (Grand Comoro); *Milne-Edw. & Grandid. H. N. Madag., Ois.* p. 551 (1879-82); *Scl. & Hartl. P. Z. S.* 1881, p. 173 (Socotra); *Hartert, J. f. O.* 1886, p. 605 (Cassa Isl.; Tumbo; Tamara).

*Ardea albicollis*, *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 409 (1817); *id. Gal. Ois.* ii. p. 136, pl. 253 (1825).

*Ardea jugularis*, pt., *Less. Traité*, p. 574 (1831: Senegal).

*Ardea* (*Lepterodas*) *schistacea*, *Hempr. & Ehr. Symb. Phys. Zool.* ii. fol. i. Taf. 6 (1832).

*Herodias schistacea*, *Gray, List Grallæ Brit. Mus.* p. 79 (1844); *Bp. Consp.* ii. p. 122 (1855); *Heugl. Isis*, 1859, p. 346 (Red Sea).

*Herodias affinis*, *Gray, List Grallæ Brit. Mus.* p. 79 (1844: W. Africa).

*Herodias gularis*, *Gray, List Grallæ Brit. Mus.* p. 80 (1844); *Bp. Consp.* ii. p. 122 (1855); *Reichen. JB. Hamb. Wissensch. Anat.* x. p. 8 (1893: Zanzibar).

- Egretta gularis*, Rüpp. *Syst. Uebers.* p. 121 (1845).  
*Ardea schistacea*, Gray, *Gen. B.* iii. p. 556 (1847); *Hartl. Orn. W.-Afr.* p. 221 (1857: Ashanti); *id. Faun. Madag.* p. 74 (1861); *Brehm, Reis. Habesch*, p. 406 (1863); *Heugl. J. f. O.* 1867, p. 283 (Dahlak Archipelago); *Sharpe, ed. Layard's B. S. Afr.* p. 712 (1884: pt.).  
*Ardea affinis* (*nec Horsf.*), *Hartl. Beitr. Orn. W.-Afr.* p. 40 (1852: Gambia).  
*Egretta affinis*, *Hartl. J. f. O.* 1854, p. 290.  
*Egretta schistacea*, *Heugl. Syst. Uebers.* p. 58 (1856).  
*Ardea calceolata* (*nec DuBus*), *Layard, B. S. Afr.* p. 307 (1867).  
*Ardea* (*Herodias*) *cineracea* (*nec Brehm*), *Cab. J. f. O.* 1868, p. 414.  
*Herodias cineracea*, *Cab. in Von der Decken, Reis.* iii. p. 49, Taf. 17 (1869).  
*Ardea* (*Demiegretta*) *gularis*, *Blanf. Geol. & Zool. Abyss.* p. 435 (1870: Diasee Isl.).  
*Lepterodius gularis*, *Heine & Reichen. Nomencl. Mus. Hein.* p. 306 (1890).

*Adult male.* General colour above and below dark slate-colour; the crown and long ornamental plumes of the nape and of the back, as well as those of the fore-neck, slaty blue; the chin and upper throat, as well as the cheeks, conspicuously white: "bill orange-yellow; lores and eyebrows yellow, the latter as well as the nasal region shaded with olive; feet olive-blackish; lower part of tarsi and toes orange; iris sometimes white, sometimes yellow" (*Von Heuglin*). Total length 21 inches, culmen 3·8, wing 10·9, tail 3·5, tarsus 4·05.

The non-breeding plumage is very much blacker than the full plumage, and the ornamental nape-plumes are wanting, although there are lengthened plumes upon the lower back and on the fore-neck. In the breeding-plumage the feathers become more slaty grey, and the elongated nuchal plumes are developed. The difference, however, between the African bird, *D. gularis*, and the bird from the Mekran Coast and Sind, *D. asha*, is very appreciable on the comparison of a series.

*Young birds* are much greyer than the adults, the general tone of the plumage being ashy brown, with a considerable amount of white on the abdomen.

The pure white phase of the present species is accompanied by the same development of the ornamental plumage, as the grey phase. Interbreeding between the white and grey birds must undoubtedly take place, as many of the white-plumaged specimens have an intermixture of grey or brown feathers, while the dark-plumaged birds have often an admixture of white feathers, this generally taking place on the bastard-wing or primary-coverts.

The length of the tarsus varies from 3·5 to 4·75 inches, a variation of more than an inch, even in fully adult birds. The individuals which have the tarsus 4·75 inches were procured by Surgeon-Capt. Penton at Suakin; but another specimen in his collection has the tarsus 4·3, which is the same size as in Mr. Blanford's Massowa birds, and therefore the idea that the Red Sea possesses a larger form of Reef Heron must be abandoned.

*Hab.* Tropical Africa and Madagascar. From the Gulf of Suez

to Mozambique on the East Coast, and from Senegambia to Gaboon on the West.

|                                |                                       |                                  |
|--------------------------------|---------------------------------------|----------------------------------|
| a. Ad. st.                     | Senegambia.                           | Governor Rendall [C.].           |
| b. ♂ ad. alb. sk. [t. 3.5].    | Rufisque, Senegal.                    | L. Laglaize [C.].                |
| c, d, e. ad. sk. [t. 3.6-3.9]. | Accra, May, July (J. Smith).          | Shelley Coll.                    |
| f. Ad. sk. [t. 3.5].           | River Niger.                          | Dr. Baikie [C.].                 |
| g. Juv. sk. [t. 3.5].          | Cameroons.                            | Sir R. Burton [P.].              |
| h. Juv. sk. [t. 3.1].          | River Ogowé, Gaboon.                  | H. T. Ansell, Esq. [P.].         |
| i. Ad. sk. [t. 3.9].           | S.E. Madagascar, March.               | Shelley Coll.                    |
| k. Juv. sk. [t. 4.1].          | Madagascar ( <i>Bewsher</i> ).        | Shelley Coll.                    |
| l, m. ♀ ad. sk. [t. 4.3-4.6].  | Dissee Island, Annesley Bay, Aug. 30. | W. T. Blanford, Esq. [C.].       |
| n. ♀ alb. sk. [t. 4.1].        | Massowa, Aug. 25.                     | W. T. Blanford, Esq. [C.].       |
| o. ♀ ad. sk. [t. 3.95].        | Massowa, Aug. 26 ( <i>W. Jesse</i> ). | Tweeddale Coll.                  |
| p, q. Ad. sk. [t. 4.3-4.75].   | Suakin.                               | Surgeon-Capt. R. H. Penton [P.]. |
| r. Ad. sk. [t. 3.9].           | Jeddah ( <i>Zerkab</i> ).             | Shelley Coll.                    |
| s. Imm. sk.                    | White Nile.                           | Sir F. Galton [P.].              |

## 2. *Leptierodius asha*.

*Ardea asha*, *Sykes*, *P. Z. S.* 1832, p. 157 (Deccan); *Gray*, *Gen. B.* iii. p. 556 (1847); *Blyth*, *Ibis*, 1865, p. 38.

*Herodias asha*, *Blyth*, *Cat. B. Mus. As. Soc.* p. 280 (1849: Indian Penins.).

*Demigretta asha*, *Jerd. B. Ind.* iii. p. 747 (1864); *Holdsw. P. Z. S.* 1872, p. 477 (Ceylon); *Hayes Lloyd*, *Ibis*, 1873, p. 418 (Kathi-awar); *Sharpe*, *Ibis*, 1886, p. 490 (Fao), 1891, p. 112.

*Ardea sacra* (pt.), *Gray*, *Hand-l. B.* iii. p. 28, no. 10120 (1871).

*Ardea gularis* (*nec Bosc*), *Hume*, *Nests & Eggs Ind. B.* p. 617 (1873); *Blanf. East. Persia*, ii. p. 296 (1876: Gwádar); *Legge*, *B. Ceylon*, p. 1136 (1890).

*Demigretta gularis* (*nec Bosc*), *Hume*, *Str. F.* i. pp. 45, 138, 254 (1873: Karachi Harbour; Mekran Coast), iv. p. 23 (1876: Coasts of Sind and Kutch); *Fairbank*, *t. c.* p. 263 (Deccan); *Hume*, *t. c.* pp. 414, 421, 465 (Laccadives); *Butler*, *Str. F.* v. p. 224 (1877: Mandavee); *Davidson & Wenden*, *Str. F.* vii. p. 95 (1878: Deccan); *Hume*, *t. c.* p. 453 (Mandavee); *id.* *Str. F.* viii. p. 114 (1879); *Vidal*, *t. c.* p. 173 (S. Konkan); *Butler*, *Cat. B. Sind etc.* p. 69 (1879); *id.* *Cat. B. S. Bomb. Pres.* p. 82 (1880: Belgaum); *Vidal*, *Str. F.* ix. p. 89 (1880: S. Konkan); *Butler*, *t. c.* p. 434 (1881); *Murray*, *Vertebr. Faun. Sind*, p. 271 (1884); *Sharpe*, *Ibis*, 1886, p. 168 (Muscat), p. 490 (Fao); *Oates*, ed. *Hume's Nests & Eggs Ind. B.* iii. p. 244 (1890: Mekran Coast).

*Adult male.* Similar to *L. gularis*, but much paler and more slaty blue above and below, the decorative plumes on the fore-neck and on the lower back inclining to pearly grey, as do also the two long ornamental feathers of the nape: "bill yellow, brownish on the upper mandible; legs black; feet greenish; iris pale yellow"

(*A. O. Hume*). Total length about 24 inches, culmen 4, wing 11·3, tail 4·1, tarsus 4·15.

*Adult female*. Similar in plumage to the male and having the same decorative plumes: "bill pale orange, fleshy at base of lower mandible; legs and feet greenish yellow below tarsus at joint, upwards blackish slate; iris pale straw-colour" (*E. A. Butler*). Total length about 22 inches, culmen 3·8, wing 11·3, tail 3·7, tarsus 3·9.

As with *L. gularis*, the winter plumage is much darker and more slaty black than the summer plumage.

The white phase possesses just the same ornamental plumes as the grey phase: "upper mandible wood-brown, the lower one dull yellow; feet yellow, the base of the tarsi and some patches greenish yellow; lores slaty greenish-yellow; orbital space more hoary; iris bright yellow" (*E. A. Butler*).

*Young birds* are very much paler and more pearly grey than the adults, and have of course no ornamental plumes on the lower back or on the nape. In addition to the white chin and upper throat, the centre of the lower throat is mottled with ashy white, and the long feathers of the fore-neck are ashy with white centres; there is also a good deal of white on the abdomen, and the bastard-wing and primary-coverts are for the most part white. One specimen collected by Colonel Butler at Mandavee is of a beautiful slaty blue, with the ornamental feathers well developed, and yet has *one wing with the fourth and fifth primaries entirely white like the primary-coverts and bastard-wing*. "Bill brown above, yellowish flesh-colour below; feet and half the tarsus green; upper part of tarsus and thigh black; orbital skin yellowish green; iris pale straw-colour" (*E. A. Butler*).

*Hab.* Western coast of the Indian Ocean from the Persian Gulf to Sind, and south to Ceylon and the Laccadive Islands.

|                                                                 |                                                         |                                             |
|-----------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------|
| a. Juv. sk. [t. 4·3].                                           | Fao, Persian Gulf.                                      | W. D. Cumming, Esq.<br>[P.]                 |
| b-e. Ad. et juv. alb. sk. [t. 3·85-4·3].                        | Fao, Oct.                                               | W. D. Cumming, Esq.<br>[P.]                 |
| f. ♀ juv. sk. [t. 3·8].                                         | Muscat.                                                 | Colonel Mills [P.]                          |
| g. ♀ ad. sk. [t. 3·4].                                          | Mandavee, Jan. 25 ( <i>E. A. Butler</i> ).              | Hume Coll.                                  |
| h. ♀ ad. sk. [t. 3·4].                                          | Sonmiani, Mekran Coast, Feb. 2 ( <i>E. A. Butler</i> ). | Hume Coll.                                  |
| i. ♀ ad. sk. [t. 3·9].                                          | Gwader, Mekran Coast, Feb. 18 ( <i>A. O. H.</i> ).      | Hume Coll.                                  |
| k-o. ♂ ad. [t. 3·8-4·15]; p-u. ♀ ad. et juv. sk. [t. 3·45-3·8]. | Karachi, Sind, Feb. ( <i>A. O. H.</i> ).                | Hume Coll.                                  |
| v. ♀ juv. sk. [t. 4·1].                                         | Karachi, Aug. 7 ( <i>E. A. Butler</i> ).                | Hume Coll.                                  |
| w. ♂ imm. sk. [t. 3·85].                                        | Karachi ( <i>Dr. Gould</i> ).                           | India Museum.                               |
| x. Imm. sk. [t. 3·7].                                           | ? Deccan ( <i>Sykes</i> ).                              | India Museum.<br>(Type of <i>D. asha</i> .) |



|                         |                                         |               |
|-------------------------|-----------------------------------------|---------------|
| y. ♀ alb. sk. [t. 8-4]. | Bombay Harbour, Feb. 2<br>(A. O. H.).   | Hume Coll.    |
| z. Juv. sk. [t. 8-95].  | Tinnevelli Distr., S. India<br>(Sykes). | India Museum. |

## 10. GARZETTA.

*Garzetta, Kamp, Natürl. Syst. p. 76 (1829) . . . . .* Type. *G. garzetta.*

*Range.* Southern and Central Europe, throughout temperate Asia to China and Japan.

*Key to the Species.*

- a. Toes with more or less yellow on them . . . . . *garzetta*, p. 118.  
b. Toes perfectly black; no yellow on them . . . . . *nigripes*, p. 122.

1. *Garzetta garzetta.*

L'Aigrette, *Bris. Orn.* v. p. 431 (1760); *d'Aubent. Pl. Enl.* viii. pl. 901, *Buff. Hist. Nat. Ois.* vii. p. 372, pl. 20 (1760).  
*Ardea garzetta*, *Linn. Syst. Nat.* i. p. 237 (1766); *Gm. Syst. Nat.* i. p. 628 (1788); *Temm. Man. d'Orn.* p. 368 (1815); *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 405 (1817); *Rour. Orn. Prov.* pl. 315 (1825); *Pall. Zoogr. Rosso-Asiat.* ii. p. 122 (1811); *Sykes, P. Z. S.* 1832, p. 157; *Gould, B. Eur.* iv. pl. 277 (1837); *Naum. Vög. Deutschl.* ix. p. 101, Taf. 223 (1838); *Crespon, Orn. Gard.* p. 384 (1840); *Keys. & Blas. Wirb. Eur.* pp. lxxix, 219 (1840); *Nordm. in Démid. Voy. Russ. Mérid.* iii. p. 260 (1840: Bessarabia; Black Sea); *Selys-Longch. Faun. Belg.* p. 133 (1842); *Schl. Rev. Crit.* p. xcvi (1844); *Muhle, Beitr. Orn. Griechenl.* p. 114 (1844); *Hewitt, Eggs Brit. B.* ii. p. 276, pl. 75. fig. 2 (1846); *Gray, Gen. B.* iii. p. 555 (1847); *Thomps. B. Irel.* ii. p. 156 (1850); *Schl. Vog. Nederl.* pl. 191 (1854); *Hartl. Orn. W.-Afr.* p. 221 (1857); *Linderm. Vög. Griechenl.* p. 150 (1860); *Poeyss, Ibis*, 1860, p. 346 (Epirus); *Schl. Dier. Nederl. Vogels*, pl. 19. fig. 5 (1861); *Hartl. J. f. O.* 1861, p. 269 (Bissao); *Gray, List Brit. B.* p. 143 (1863); *Adams, Ibis*, 1864, p. 31 (Egypt); *Wright, t. c.* p. 143 (Malta); *Layard, B. S. Afr.* p. 308 (1867); *Chapm. Trav. S. Afr.* ii. p. 418 (1868: Lake Ngami); *Schl. & Poll. Faune Madag., Ois.* p. 123 (1868); *Triestr. Ibis*, 1868, p. 325 (Palestine); *Borggr. Vogelf. Norddeutschl.* p. 122 (1869); *Saunders, Ibis*, 1869, p. 181 (S. Spain); *Godman, Azores*, p. 34 (1870); *Elces & Buckley, Ibis*, 1870, p. 334 (Danube); *Finsch & Hartl. Vög. Ostaf.* p. 687 (1870); *Gray, Hand-l. B.* iii. p. 28, no. 10113 (1871); *Harting, Handb. Brit. B.* p. 148 (1872); *Heugl. Orn. N.O.-Afr.* ii. pt. 1, p. 1067 (1873); *Hume, Nests & Eggs Ind. B.* p. 616 (1873); *Danf. & Harvie-Brown, Ibis*, 1875, p. 425 (Transylvania); *Fallon, Ois. Belg.* p. 161 (1875); *Blanf. East. Pers.* ii. p. 296 (1876: Ispahan, 5000 feet, April); *Reichen. J. f. O.* 1877, p. 13 (Loango Coast), p. 271 (crit.); *Hartl. Vög. Madag.* p. 298 (1877); *Sharpe & Bouvier, Bull. Soc. Zool. France*, iii. p. 80 (1878: Landann); *Danf. Ibis*, 1878, p. 34 (Asia Minor); *Doig, Str. F.* vii. p. 467 (1878: E. Narra); *Dresser, B. Eur.* vi. p. 239, pl. 399 (1880); *Milne-Edwards & Grandid. Nat. Hist. Madag., Ois.* ii. p. 549 (1882); *B. O. U. List Brit. B.* p. 108 (1883); *Seebohm, Ibis*, 1883, p. 32 (Caucasus), p. 398 (Dobrudacha, breeding); *Eagle Clarke, Ibis*, 1884, p. 146 (Sclavonia, breeding); *Seebohm, t. c.* p. 268 (Kiu-

- kiang); *Saunders, ed. Yarrell's Brit. B.* iv. p. 182 (1884); *Seebohm, Hist. Brit. B.* ii. p. 481 (1884); *Tristr. Faun. & Flor. Palest.* p. 110 (1884); *Whitehead, Ibis*, 1885, p. 44 (Corsica); *Swinhoe & Barnes, Ibis*, 1885, p. 136 (Mhow); *Reid, t. c.* p. 250 (Marocco); *Tait, Ibis*, 1887, p. 372 (Portugal); *Guillem. Ibis*, 1888, p. 113; *Lilford, Ibis*, 1889, p. 343 (Cyprus); *Saunders, Man. Brit. B.* p. 316 (1889); *Sibree, Ibis*, 1892, p. 116 (Madagascar).
- Ardea nivea*, S. G. Gmelin, *Reise d. Russl.* i. p. 164 (1770); *id. N. Comm. Imp. Petrop.* xv. p. 458, Taf. (1771).
- The Little Egret, *Lath. Gen. Syn.* iii. pt. 1, p. 90 (1785); *Yarrell, Brit. B.* ii. p. 458 (1843).
- Snowy Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 92 (1785).
- Ardea xanthodactyla*, *Rafin. Caratt.* p. 5 (1810).
- Herodias garzetta*, *Boie, Isis*, 1822, p. 559; *Brehm, Vög. Deutschl.* p. 586 (1831); *Gray, List Grallæ Brit. Mus.* p. 78 (1844: Nepal); *Blyth, Cat. B. Mus. As. Soc.* p. 279 (1849: Calcutta); *Tristr. Ibis*, 1860, p. 77 (Algeria); *Irby, Ibis*, 1861, p. 245 (Oudh); *Swinh. Ibis*, 1863, p. 417 (Formosa); *Jerd. B. Ind.* iii. p. 746 (1864); *Doderl. Arif. Sicil.* p. 213 (1869); *Gould, B. Gt. Brit.* iv. pl. 23 (1870); *Swinh. Ibis*, 1870, p. 365 (Hainan); *Blanf. Geol. & Zool. Abyss.* p. 435 (1870); *Shelley, B. Egypt*, p. 268 (1872); *Gurney in Anderss. B. Dam. Ld.* p. 290 (1872); *Holdsw. P. Z. S.* 1872, p. 477 (Ceylon); *Ball, Str. F.* i. p. 87 (1873); *Hume, t. c.* p. 253 (Sindh); *Adam, t. c.* p. 399 (Sambhur); *Hume, t. c.* p. 462 (Acheen, Sumatra); *id. Str. F.* ii. p. 304 (1874: Andamans); *Ball, t. c.* p. 434 (Chota Nagpur); *Wald. Ibis*, 1874, p. 148 (Andamans); *Irby, Orn. Strs. Gibr.* p. 184 (1875); *Hume, Str. F.* iii. p. 190 (1875: Pegu); *Blyth, B. Burm.* p. 159 (1875); *Butler, Str. F.* iv. p. 22 (1876: Deesa); *Fairb. t. c.* p. 263 (Deccan); *Hume, Str. F.* v. p. 46 (1877: Cachar); *Ayres, Ibis*, 1877, p. 349 (Transvaal); *David & Oust. Ois. Chine*, p. 440 (1877: Central and S. China); *Hume & Darison, Str. F.* vi. p. 476 (1878); *Tiraut, Bull. Agric. et Industr. Coch. Chine*, 1878, p. 150 (Cochin China); *Dauids. & Wenden, Str. F.* vii. p. 91 (1878: Deccan); *Butler, t. c.* p. 189 (E. Narra, breeding); *Ball, t. c.* p. 230 (Ganges to Godavery); *Cripps, t. c.* p. 307 (Faridpur); *Hume, t. c.* p. 490 (Calcutta); *id. Str. F.* viii. p. 71 (Malacca), p. 114 (1879); *Vidal, t. c.* p. 173 (S. Konkan); *Scully, t. c.* p. 360 (Nepal Valley); *Doig, t. c.* p. 372 (E. Narra); *Butler, Cat. B. Sind etc.* p. 69 (1879); *id. Cat. B. S. Bomb. Pres.* p. 82 (1880); *Legge, B. Ceylon*, p. 1144 (1880); *Vidal, Str. F.* ix. p. 88 (1880: S. Konkan); *Ayres, Ibis*, 1880, p. 269 (Transvaal); *Bocage, Orn. Angola*, p. 443 (1881); *Reid, Str. F.* x. p. 75 (1881: Lucknow); *Blakist. & Pryer, B. Jap.* p. 119 (1882); *Davidson, Str. F.* x. p. 323 (1882: W. Khandeish); *Kelham, Ibis*, 1882, p. 193 (Singapore); *Oates, Handb. B. Brit. Burm.* ii. p. 248 (1883); *Hume, Str. F.* x. p. 416 (1883: S.W. Mysore); *Parker, Ibis*, 1883, p. 194 (Ceylon); *Blakist. Amended List B. Jap.* p. 24 (1884: not in Yezo or Kuriles); *Murray, Vertebr. Faun. Sind*, p. 270 (1884); *Sharpe, ed. Layard's B. S. Afr.* p. 716 (1884); *Salvad. Elenco Ucc. Ital.* p. 243 (1886); *Hume, Str. F.* xi. p. 333 (1888: Manipur); *Oates, ed. Hume's Nests & Eggs Ind. B.* iii. p. 242 (1890); *Styan, Ibis*, 1891, pp. 327, 492 (Lower Yangtse); *De la Touche, Ibis*, 1892, p. 488 (Foochow & Swatow); *Hartert, t. c.* p. 512 (E. Prussia).
- Ardea orientalis*, *Gray, Zool. Misc.* p. 20 (1831); *id. & Hardw. Illustr. Ind. Zool.* i. pl. 65 (1831); *Keys. & Blas. Wirb. Eur.* pp. lxxix, 219 (1840).

- Herodias jubata*, *Brehm, Vög. Deutschl.* p. 586 (1831).  
*Egretta garzetta*, *Swains. Classif. B.* ii. p. 354 (1837); *Bp. Comp. List B. Eur. & N. Amer.* p. 47 (1838); *Macgill. Brit. B.* iv. p. 471 (1852); *Brehm, Naum.* 1855, p. 290; *Heugl. Syst. Uebers.* p. 58 (1856); *Jaub. et Barth.-Lapomm. Rich. Orn.* p. 301 (1859); *Filippi, Viagg. Pers.* p. 351 (1865); *Degl. et Gerbe, Orn. Eur.* ii. p. 295 (1867); *Fritsch, Vög. Eur.* tab. 42. fig. 2 (1870); *Salvad. Faun. Ital., Ucc.* p. 421 (1871); *Blakist. & Pryer, Ibis*, 1878, p. 224; *Gigl. Anf. Ital.* p. 279 (1886), *id. 1st Resoc.* p. 435 (1889), *2nd Resoc.* p. 650 (1890), *3rd Resoc.* p. 511 (1891).  
*Egretta orientalis*, *Bp. Comp. List B. Eur. & N. Amer.* p. 47 (1838); *Heugl. Syst. Uebers.* p. 58 (1856).  
*Erodias garzetta*, *Macgill. Man. Brit. B.* ii. p. 135 (1843).  
*Egretta nigrirostris* (*nec Gray*), *Hodgs. Icon. ined. in Brit. Mus., Grallæ*, pl. 63, nos. 630, 641, *id. in Gray's Zool. Misc.* p. 86 (1844).  
*Herodias orientalis*, *Gray, List Grallæ Brit. Mus.* p. 78 (1844: Nepal); *id. Cat. Mamm. &c. Nepal pres. Hodgs.* p. 134 (1846).  
*Egretta linderayeri*, *Brehm, Naum.* 1855, p. 290.  
*Egretta jubata*, *Brehm, Naum.* 1855, p. 290.  
*Garzetta egretta*, *Bp. Consp. Av.* ii. p. 118 (1855); *id. Compt. Rend.* xl. p. 722 (1855); *Loche, Expl. Sci. Algér., Ois.* ii. p. 133 (1867); *Swinh. P. Z. S.* 1871, p. 412 (Southern China; Hainan; Formosa); *Boyd. Consp. Av. Imp. Ross.* p. 112 (1884: Black Sea; Crimea; Caucasus; Aralo-Caspian distr., Thian Shan).  
*Garzetta orientalis*, *Bp. Consp. Av.* ii. p. 119 (1855); *id. Compt. Rend.* xl. p. 722 (1855).  
*Ardea egretta*, *Barratt, Ibis*, 1876, p. 210 (Lydenburg).  
*Garzetta nivea*, *Tacz. Bull. Soc. Zool. France*, ii. p. 150 (1877: Poland).  
*Garzetta garzetta*, *Radde, Orn. Cauc.* pp. 42, 402 (1884).

*Adult male in breeding-plumage.* Everywhere snowy white, with two elongated plumes depending from the nape, the dorsal plumes enormously elongated into a beautiful tuft of feathers, which reach a little beyond the tail and are recurved at the ends; on the fore-neck some elongated narrow plumes: "bill black; bare skin about the eye and base of bill, whitish fulvescent; tarsi and shanks black, feet greenish yellow, joints of toes spotted with black on the upper surface; iris pale ashy yellow, with an outer circle of brownish red" (*T. Ayres*). Total length about 20 inches, culmen 3.3, wing 10.5, tail 2.75, tarsus 3.7.

*Adult female.* Similar to the male, but the ornamental plumes not quite so much developed. Total length 22.5 inches, culmen 3.45, wing 11.3, tail 3.9, tarsus 3.75, middle toe and claw 3.65.

*Adult in winter plumage.* Differs from that of the summer plumage in the want of all the ornamental plumes.

*Young.* Resembles the winter plumage of the adult.

*Hab.* Southern Europe, across to China and Japan, south to the Burmese countries and the Indian Peninsula and Ceylon; Philippine Islands; Malay Peninsula; the whole of Africa.

- |                        |                               |                             |
|------------------------|-------------------------------|-----------------------------|
| a. <i>Æstiv. sk.</i>   | Corsica.                      | J. Whitehead, Esq.<br>[P.]. |
| b. ♂ <i>æstiv. sk.</i> | Tonia, Feb. 18, 1857 (O. S.). | Salvin-Godman Coll.         |
| c. ♂ <i>æstiv. st.</i> | Athens.                       | Consul Merlin [P.].         |

|                                                                           |                                                        |                                                            |
|---------------------------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------------|
| <i>d, e.</i> ♂ æstiv. ;<br><i>f.</i> ♀ æstiv. sk.<br><i>g.</i> Æstiv. st. | Egypt, April, May ( <i>G. E. S.</i> ).<br>Senegambia.  | Shelley Coll.<br>Governor Rendall<br>[C.]<br>India Museum. |
| <i>h.</i> ♂ æstiv. sk.                                                    | Angolala, Shoa, May ( <i>Sir W. Harris</i> ).          | Tweeddale Coll.                                            |
| <i>i.</i> Hiem. sk.                                                       | Dakar, Senegal ( <i>L. Laglaize</i> ).                 | Livingstone Exped.                                         |
| <i>k.</i> Hiem. sk.                                                       | Zambesi ( <i>Sir J. Kirk</i> ).                        | Monteiro Coll.                                             |
| <i>l.</i> Hiem. sk.                                                       | Benguela.                                              | A. Foresman, Esq.<br>[P.]                                  |
| <i>m.</i> ♂ æstiv. sk.                                                    | Transvaal.                                             | Tweeddale Coll.                                            |
| <i>n.</i> ♀ æstiv. sk.                                                    | Potchefstroom, Transvaal ( <i>T. Ayres</i> ).          | Gurney Coll.                                               |
| <i>o.</i> ♂ æstiv. ;<br><i>p.</i> Juv. sk.                                | Potchefstroom, Jan., Aug. ( <i>T. Ayres</i> ).         | Shelley Coll.                                              |
| <i>q.</i> Ad. sk.                                                         | Makalaka Country ( <i>Bradshaw</i> ).                  | Shelley Coll.                                              |
| <i>r.</i> Æstiv. sk.                                                      | Durban ( <i>T. Ayres</i> ).                            | Sir A. Smith.                                              |
| <i>s, t.</i> Ad. sk.                                                      | Cape Colony.                                           | Gould Coll.                                                |
| <i>u.</i> Æstiv. sk.                                                      | West of Antananarivo, Madagascar, July.                | India Museum.                                              |
| <i>v, w.</i> ♂ ♀ æstiv. sk.                                               | Mesopotamia ( <i>Commander Jones</i> ).                | Hume Coll.                                                 |
| <i>x.</i> ♂ æstiv. sk.                                                    | Cumba, Upper Sindh, Jan. 7 ( <i>A. O. H.</i> )         | Hume Coll.                                                 |
| <i>y.</i> ♂ æstiv. sk.                                                    | Sambhur, Nov. ( <i>R. M. Adam</i> ).                   | Hume Coll.                                                 |
| <i>z, a'.</i> ♂ ♀ æstiv. sk.                                              | Delhi, June, Sept. ( <i>C. T. Bingham</i> ).           | Hume Coll.                                                 |
| <i>b'-d'.</i> ♂ æstiv. ;<br><i>e', f'.</i> ♀ æstiv. sk.                   | Sultanpur, Gurgaon, Aug., Nov. ( <i>W. N. Chill</i> ). | Hume Coll.                                                 |
| <i>g'.</i> Æstiv. sk.                                                     | Umbala ( <i>C. H. T. Marshall</i> ).                   | Hume Coll.                                                 |
| <i>h', i'.</i> Æstiv. sk.                                                 | Etawah.                                                | Pinwill Coll.                                              |
| <i>k', l'.</i> Æstiv. sk.                                                 | Oudh.                                                  | Hume Coll.                                                 |
| <i>m', n'.</i> Æstiv. sk.                                                 | Oudh.                                                  | Hodgson Coll.                                              |
| <i>o'.</i> Æstiv. sk.                                                     | Nepal.                                                 | Hume Coll.                                                 |
| <i>p'.</i> ♀ æstiv. sk.                                                   | Khandeish, April 20 ( <i>J. Davidson</i> ).            | Dr. R. B. Hinde [P.]<br>Hume Coll.                         |
| <i>q'.</i> Æstiv. sk.                                                     | Kamptee.                                               | India Museum.                                              |
| <i>r', s'.</i> ♂ ♀ æstiv. sk.                                             | Seoni.                                                 | Gould Coll.                                                |
| <i>t', u'.</i> Æstiv. sk.                                                 | Deccan ( <i>Sykes</i> ).                               | Dr. R. B. Sharpe<br>[P.]                                   |
| <i>v'.</i> Æstiv. sk.                                                     | Deccan ( <i>Burgess</i> ).                             | Tweeddale Coll.                                            |
| <i>w'.</i> ♂ æstiv. sk.                                                   | N.E. coast of Ceylon ( <i>W. V. Legge</i> ).           | Hodgson Coll.                                              |
| <i>x'.</i> Æstiv. sk.                                                     | Ceylon.                                                | Hume Coll.                                                 |
| <i>y'-b''.</i> Æstiv. sk.                                                 | Nepal.                                                 |                                                            |
| <i>c''.</i> Juv. sk.                                                      | Tippook, Assam, March 24 ( <i>J. Cockburn</i> ).       |                                                            |
| <i>d'', e''.</i> Hiem. sk.                                                | Assam ( <i>McClelland</i> ).                           | India Museum.                                              |
| <i>f'.</i> Hiem. sk.                                                      | Dilkoosha, Cachar ( <i>J. Inglis</i> ).                | Hume Coll.                                                 |
| <i>g'.</i> ♂ æstiv. sk.                                                   | Boori Bazar, Manipur, March 12 ( <i>A. O. H.</i> ).    | Hume Coll.                                                 |
| <i>h''.</i> Æstiv. sk.                                                    | Logtak Lake, Manipur, March 15 ( <i>A. O. H.</i> ).    |                                                            |
| <i>i''.</i> Æstiv. sk.                                                    | Bhamo, Upper Burma, Feb.                               | Dr. J. Anderson [C.]                                       |
| <i>k''.</i> ♂ hiem. ;<br><i>l'.</i> Æstiv. sk.                            | Pegu, Jan. 27 ( <i>E. W. O.</i> ).                     | Oates Coll.                                                |
| <i>m''.</i> ♀ æstiv. sk.                                                  | Pegu, May 26 ( <i>E. W. O.</i> ).                      | Hume Coll.                                                 |

|                                                                                       |                                                           |                     |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------|
| n". ♀ hiem. sk.                                                                       | Salween River, Tenasserim, Dec. 20 ( <i>W. Limborg</i> ). | Tweeddale Coll.     |
| o". ♂ æstiv. sk.                                                                      | Pahpoon, Dec. 29 ( <i>W. Davison</i> ).                   | Hume Coll.          |
| p", q". ♂ æstiv. sk.                                                                  | Thatone, Sept., Dec. ( <i>W. Davison</i> ).               | Hume Coll.          |
| r". ♂ æstiv. sk.                                                                      | Tavoy, Nov. 29 ( <i>W. Davison</i> ).                     | Hume Coll.          |
| s". ♀ hiem. sk.                                                                       | Amheret, Dec. 15 ( <i>W. Davison</i> ).                   | Hume Coll.          |
| t". Æstiv. sk.                                                                        | Siam.                                                     | M. E. Pierre [P.]   |
| u". Hiem. sk.                                                                         | Saigon, Cochin China.                                     | M. E. Pierre [P.]   |
| v". Æstiv. sk.                                                                        | Hainan, Feb. ( <i>R. Swinhoe</i> ).                       | Seebohm Coll.       |
| w". Æstiv. sk.                                                                        | Japan.                                                    | Gould Coll.         |
| x", y". Æstiv. sk.                                                                    | Fokien, China.                                            | Gould Coll.         |
| z". Hiem. sk.                                                                         | Ningpo, Nov. 1 ( <i>R. Swinhoe</i> ).                     | Seebohm Coll.       |
| a <sup>3</sup> . ♂ æstiv. sk.                                                         | Shanghai.                                                 | Tweeddale Coll.     |
| b <sup>3</sup> . Ad. æstiv. sk.                                                       | Foochow ( <i>R. Swinhoe</i> ).                            | Seebohm Coll.       |
| c <sup>3</sup> . Ad. hiem. sk.                                                        | Hankow ( <i>R. Swinhoe</i> ).                             | Seebohm Coll.       |
| d <sup>3</sup> . Ad. hiem. sk.                                                        | S.W. Formosa.                                             | Seebohm Coll.       |
| e <sup>3</sup> . Hiem. sk.                                                            | Yezo, Japan.                                              | Tweeddale Coll.     |
| f <sup>3</sup> -f <sup>3</sup> . Æstiv. et hiem. sk.                                  | Yokohama ( <i>H. Pryer</i> ).                             | Seebohm Coll.       |
| m <sup>3</sup> . Æstiv. sk.                                                           | Malacca, July.                                            | Hume Coll.          |
| n <sup>3</sup> -q <sup>3</sup> . Hiem. sk.                                            | Malacca ( <i>Dr. Mainyay</i> ).                           | Tweeddale Coll.     |
| r <sup>3</sup> , s <sup>3</sup> . ♂ ♀ hiem. sk.                                       | Phoenix Bay, Andamans, Dec. 20 ( <i>W. Davison</i> ).     | Hume Coll.          |
| t <sup>3</sup> . Hiem. sk.                                                            | Port Blair ( <i>R. J. Wimberley</i> ).                    | Hume Coll.          |
| u <sup>3</sup> . Hiem. sk.                                                            | S. Andamans, Dec. 17 ( <i>R. G. W. R.</i> ).              | Tweeddale Coll.     |
| v <sup>3</sup> . Hiem. sk.                                                            | Trinkut, Nicobars, Jan. 29.                               | Tweeddale Coll.     |
| w <sup>3</sup> . Æstiv. sk.                                                           | Acheen, Sumatra.                                          | Tweeddale Coll.     |
| x <sup>3</sup> . Hiem. sk.                                                            | Labuan.                                                   | H. Vetch, Esq. [P.] |
| y <sup>3</sup> . Hiem. sk.                                                            | Manila, Luzon ( <i>Maitland Heriot</i> ).                 | Tweeddale Coll.     |
| z <sup>3</sup> . ♂ hiem. sk.                                                          | Sibulan, Negros, March 7 ( <i>E. L. Moseley</i> ).        | Steere Expedition.  |
| a <sup>4</sup> , b <sup>4</sup> . Æstiv.; c <sup>4</sup> , d <sup>4</sup> . Hiem. sk. | Monte Alban, Luzon, March ( <i>A. H. Everett</i> ).       | Tweeddale Coll.     |
| e <sup>4</sup> . ♂ hiem. sk.                                                          | Talibon, N. Bohol, Oct. ( <i>A. H. Everett</i> ).         | Tweeddale Coll.     |
| f <sup>4</sup> . Sternum.                                                             | Algeria.                                                  | M. Lefebvre.        |
| g <sup>4</sup> . Sternum.                                                             | Algeria.                                                  | M. Parsudaki.       |

## 2. *Garzetta nigripes*.

- Ardea nigripes*, Temm. *Man. d'Orn.* iv. p. 376 (1840: Ind. Arch.).  
*Herodias immaculata*, Gould, *B. Austr.* vi. pl. 58 (1848); *Reichenb. Vög. Neuhol.* sp. 326 (1851); *id. Handb., Grall.* Taf. cixi. figs. 2405-6 (1851); *Blyth, Ibis*, 1865, p. 371; *Ramsay, Proc. Linn. Soc. N. S. W.* i. p. 395 (1876: Port Moresby); *Salvad. Ann. Mus. Genov.* xviii. p. 334 (1881); *id. Orn. Papuasie etc.* iii. p. 356 (1882: Ramoi); *Meyer u. Wiglesw. Abh. Mus. Drend.* 1894-95, no. 4, p. 3 (1894: Kema).  
*Ardea immaculata*, Gray, *Gen. B.* iii. p. 555 (1847); *id. P. Z. S.* 1858, p. 197; *id. Cat. B. New Guinea*, p. 62 (1859); *Hartl. & Finsch, Vög. Ostaf.* p. 689 (1870).

*Herodias garzetta*, pt., *Blyth, Cat. B. Mus. As. Soc. Beng.* p. 239 (1849); *Ramsay, Proc. Linn. Soc. N. S. W.* iv. p. 102 (1879: S.E. New Guinea, Louisiades, Duke of York and Solomon Isl.).

*Garzetta immaculata*, *Bp. Consp.* ii. p. 119 (1855); *id. C. R.* xl. p. 722 (1855); *Rosenb. J. f. O.* 1864, p. 136.

*Garzetta nigripes*, *Bp. Consp.* ii. p. 119 (1855).

*Egretta melanopus*, *Bp. C. R.* xl. p. 722 (1855).

*Ardea garzetta*, pt., *Schl. Mus. Pays-Bas*, *Ardea*, p. 12 (1863); *id. N. T. D.* iii. p. 348 (1866: Aru Isl.); *Rosenb. Malay. Arch.* p. 373 (Aru), p. 376 (Salawati), p. 563 (N. Guinea; Soek; Jappen).

*Herodias melanopus* (*nec Wagl.*), *Gould, Handb. B. Austr.* ii. p. 304 (1865); *Ramsay, Proc. Linn. Soc. N. S. Wales*, i. p. 191 (1876), ii. p. 619 (1877).

*Herodias immaculatus*, *Rosenb. Reis naar Zuidoostereil.* p. 53 (1867: Aru).

*Herodias nigripes*, pt., *Salvad. Ann. Mus. Genov.* x. p. 165 (1877); *D'Albert. Nuova Guinea*, p. 582 (1880).

*Ardea nivea*, pt., *Reichen. J. f. O.* 1877, p. 271.

*Ardea melanopus*, *Dresser, B. Eur.* vi. p. 243, note (1880).

*Adult.* Similar to *G. garzetta*, and having the two elongated nuchal plumes depending from the nape, and similar ornamental plumes on the back and breast, the latter elongated and narrow as in *G. garzetta*, the dorsal plumes slightly recurved as in the allied species, but distinguished by the totally black feet and toes; the bill black, with the base dull yellowish grey (in life). Total length about 22 inches, culmen 3·4, wing 10·7, tail 3·5, tarsus 3·7, middle toe and claw 2·7.

*Winter plumage* pure white, as in summer, but without the ornamental plumes, the yellow on the lower mandible much more pronounced and the base of the culmen also yellow.

*Hab.* From Java, throughout the Moluccas to Australia.

|                                                 |                                                                |                            |
|-------------------------------------------------|----------------------------------------------------------------|----------------------------|
| a. <i>Æstiv. sk.</i>                            | Java.                                                          | Seebohm Coll.              |
| b, c. <i>Æstiv. sk.</i>                         | Java ( <i>Diard</i> ).                                         | Salvin-Godman Coll.        |
| d. <i>Æstiv. sk.</i>                            | Celebes.                                                       | Tweeddale Coll.            |
| e. <i>Æstiv. sk.</i>                            | Sula Islands.                                                  | Wallace Coll.              |
| f. <i>Hiem. sk.</i>                             | Togian Islands ( <i>A. B. Meyer</i> ).                         | Tweeddale Coll.            |
| g. ♂ <i>æstiv. sk.</i>                          | East Timor.                                                    | Wallace Coll.              |
| h. <i>Æstiv. sk.</i>                            | Victoria River, North Australia,<br>May 26.                    | J. R. Elsey, Esq.<br>[P.]  |
| i. <i>Hiem. sk.</i>                             | Derby, N.W. Australia ( <i>T. H.</i><br><i>Bowyer Bower</i> ). | Capt. Bowyer Bower<br>[P.] |
| k, l, m. <i>Æstiv. ;</i><br>n. <i>Hiem. sk.</i> | Queensland ( <i>J. T. Cockerell</i> ).                         | Salvin-Godman Coll.        |
| o. <i>Æstiv. sk.</i>                            | Moreton Bay.                                                   | Gould Coll.                |
| p. <i>Æstiv. sk.</i>                            | Interior of N. South Wales.                                    | Gould Coll.                |
| q. <i>Hiem. sk.</i>                             | New South Wales.                                               | Gould Coll.                |
| r. <i>Ad. hiem. sk.</i>                         | S. Australia.                                                  | Sir George Grey [P.]       |

## 11. LEUCOPHOYX.

Type.

*Leucophoyx*, Sharpe, *Bull. B. O. C.* iii. p. xxxix  
(1894) ..... *L. candidissima*.  
Range. North and South America.

1. *Leucophoyx candidissima*.

*Ardea nivea* (nec S. G. Gmelin), Jacq. *Beitr.* p. 18 (1784); *Lath. Ind. Orn.* ii. p. 696 (1790, pt.); *Cab. in Schomb. Reis. Guian.* iii. p. 753 (1848); *Burm. Th. Bras.* iii. p. 417 (1856).  
Little White Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 93 (1785).  
Little Egret, *Lath. t. c.* p. 90 (1785).  
P Thula, *Molina, Saggio St. Chil.* p. 205 (1786).  
*Ardea candidissima*, *Gm. Syst. Nat.* i. p. 633 (1788); *Wilson, Amer. Orn.* vii. p. 120, pl. 62, fig. 4 (1813); *Wagl. Syst. Av.*, *Ardea*, p. 178, sp. 11 (1827); *Audub. B. Amer.* pl. 242; *Neuwied, Beitr. Naturg. Bras.* iv. p. 612 (1833); *Nutt. Man.* ii. p. 49 (1834); *Audub. Orn. Biogr.* iii. p. 317 (1835), v. p. 606 (1839); *D'Orb. in Ramon de la Sagra, Hist. Nat. Cuba, Ois.* p. 196 (1839); *Audub. B. Amer.* 8vo, vi. p. 163, pl. 374 (1839); *Tschudi & Cab. Faun. Peruan* pp. 50, 297 (1845-46); *Gray, Gen. B.* iii. p. 555 (1847); *Hartl. Ind. Azara*, p. 22 (1847); *Bryant, Proc. Bost. Soc. N. H.* vii. p. 120 (1859); *Schl. Mus. Pays-Bas, Ardeæ*, p. 15 (1863); *Léot. Ois. Trinid.* p. 408 (1866); *Bryant, Proc. Bost. Soc. N. H.* xi. p. 97 (1867: San Domingo); *Gray, Hand-l. B.* iii. p. 26, no. 10114 (1871); *Pelz. Orn. Bras.* pp. 300, 455 (1871: Sapituba; Marambaya; Ypanema; Caiçara; Rio Branco); *Coues, Key N. Amer. B.* p. 267 (1872); *Scl. & Salv. Nomencl. Av. Neotr.* p. 125 (1873); *Coues, B. N.-West*, p. 125 (1874); *Reid, Zool.* 1877, p. 479 (Ber. u. da); *Reichen. J. f. O.* 1877, p. 273; *Tacz. P. Z. S.* 1877, p. 745; *Durnf. Ibis*, 1877, p. 189 (Buenos Ayres); *Gibson, Ibis*, 1879, p. 415 (Cape San Antonio); *Scl. P. Z. S.* 1879, p. 766 (Montserrat); *Gibson, Ibis*, 1880, p. 158 (San Antonio, breeding); *Cory, B. Bahamas*, p. 167 (1880); *A. & E. Newt. Handb. Jamaica*, p. 111 (1881); *W. A. Forbes, Ibis*, 1881, p. 355 (Parahyba River); *Berlepsch, Ibis*, 1884, p. 438 (Angostura); *Cory, B. Haiti*, p. 153 (1884); *Triestr. Ibis*, 1884, p. 168 (S. Domingo); *Barrows, Auk*, i. p. 271 (Uruguay, breeding); *A. O. U. Check-l. N. Amer. B.* p. 136 (1886); *Tacz. Orn. Péron*, iii. p. 393 (1886: Tumbes); *Ferrari-Perez, Proc. U.S. Nat. Mus.* ix. p. 169 (1886: Tlaxcala); *Wells, t. c.* p. 626 (Grenada); *Everm. Auk*, iii. p. 91 (1886: Ventura Co.); *Scott, t. c.* p. 385 (Arizona); *Dutcher, t. c.* p. 435 (Long Isl.); *Salvin, Ibis*, 1886, p. 169 (Bartica Grove); *Ridgw. Man.* p. 130 (1887); *Scott, Auk*, iv. p. 136 (1887: S. Florida); *Lloyd, t. c.* p. 185 (W. Texas); *Scott, t. c.* pp. 215, 219; *Cory, t. c.* p. 324 (Bahamas); *Chapm. Auk*, v. p. 269 (1888: Texas); *Scl. & Hudson, Argent. Orn.* ii. p. 99 (1888); *Scott, Auk*, vi. p. 18 (1889: Gulf Coast of Florida); *Cory, B. W. Ind.* p. 245 (1889); *Jeffries, Auk*, vi. p. 223 (1889: Santa Barbara); *Pindar, t. c.* p. 312 (Kentucky); *Salvin, Ibis*, 1889, p. 376 (Cozumel); *Cory, B. Bahamas*, p. 167 (1890); *Holland, Ibis*, 1891, p. 16; *Brewster & Chapm. Auk*, viii. p. 157 (1891: Suwanee River); *Cory, t. c.* p. 351 (Inagua); *id. Cat. B. W. Ind.* p. 89 (1892: Bahamas; Greater Antilles; Lesser Antilles; Antigua); *Graham Kerr, Ibis*, 1892, p. 144 (Paraná); *Holland, t. c.* p. 205 (Estancia Espartilla).



- Garza chica blanca con manto, *Azara, Apunt.* iii. p. 153 (1802).  
*Ardea carolinensis*, *Ord, ed. Wilson, Amer. Orn.* vii. p. 125 (1825).  
*Ardea lactea*, *Cuv. Mus. Paris, Less. Traité*, p. 575 (1831: Cayenne).  
*Egretta candidissima*, *Gosse, B. Jamaica*, p. 336 (1847); *March, Proc. Philad. Acad.* 1864, p. 63.  
*Garzetta candidissima*, *Bp. Consp.* ii. p. 119 (1855); *Baird, Cass., & Lawr. B. N. Amer.* p. 665 (1858); *Scl. P. Z. S.* 1861, p. 81 (Jamaica); *Scl. & Salv. P. Z. S.* 1866, p. 199 (Ucayali), 1873, p. 305 (Santa Cruz); *Gundl. An. Soc. Esp. H. N.* vii. p. 357 (1878: Porto Rico); *Sennett, Bull. U.S. Geol. Surv.* iv. p. 59 (1878: Brownsville); *Merrill, Proc. U.S. Nat. Mus.* i. p. 164 (1878: S. Texas); *Lawr. t. c.* p. 66 (Dominica), p. 196 (St. Vincent), p. 236 (Antigua), p. 274 (Grenada), p. 487; *Belding, t. c.* p. 422 (Stockton); *Ridgw. Proc. U.S. Nat. Mus.* iii. p. 197 (1880); *Coues, Check-l. N. Amer. B.* p. 106 (1882); *Nutting, Proc. U.S. Nat. Mus.* vi. pp. 379, 396 (1883: Nicaragua); *Belding, t. c.* p. 548 (S. José, Cal.); *Coues, Check-l. N. Amer. B.* 2nd ed. p. 660 (1884); *Baird, Brewer, & Ridgw. Water-B. N. Amer.* i. p. 128 (1884); *Ridgw. Proc. U.S. Nat. Mus.* viii. p. 581 (1885: Cozumel).  
 ? *Garzetta thulæ*, *Bp. Consp.* ii. p. 120 (1855).  
*Herodias candidissima*, *Sallé, P. Z. S.* 1857, p. 236; *Brewer, Proc. Bost. Soc.* vii. p. 308 (1860: Cuba).

**Adult male in breeding-plumage.** Entirely white above and below, with a train of long ornamental dorsal plumes distinctly recurved; on the nape a very distinct tuft of long ornamental plumes, as well as on the fore-neck: "bill black, the basal portion of the lower mandible (sometimes one half) yellow or light-coloured; tibia and tarsi black, the lower posterior portion of the latter, with the toes, yellow; claws blackish; lores, iris, and eyelids yellow" (*R. Ridgway*). Total length 20.5 inches, culmen 3.25, wing 9.8, tail 3.4, tarsus 3.7.

**Adult female in summer plumage.** Similar to the male in every respect, but the ornamental plumes not quite so developed. Total length 20 inches, culmen 3.05, wing 9.4, tail 3.8, tarsus 3.25.

**Adult in winter plumage.** Similar to the summer plumage, but without the ornamental plumes, and with a distinct patch of yellow at the base of the bill.

**Young.** Similar to the adults, slightly crested, but without any of the ornamental plumes of the adult.

**Hab.** Temperate and Tropical America, from the northern United States throughout Central and South America to Argentina and Chili.

- |                    |                                         |                     |
|--------------------|-----------------------------------------|---------------------|
| a. ♀ aestiv. sk.   | Cedar Keys, Florida, Nov. 14            | Salvin-Godman Coll. |
|                    | ( <i>C. H. Merriam: Hensh. Coll.</i> ). |                     |
| b. ♂ aestiv. sk.   | Ocklawaha River, Florida,               | Salvin-Godman Coll. |
|                    | April 20 ( <i>C. H. Merriam:</i>        |                     |
|                    | <i>Hensh. Coll.</i> ).                  |                     |
| c-k. ♂ ad.; l-v.   | Tarpon Springs, April to Aug.           | Salvin-Godman Coll. |
| Juv.; w-a'. ♀      | ( <i>W. E. D. Scott</i> ).              |                     |
| ad. sk.            |                                         |                     |
| b', c'. ♂; d', e', | Brownsville, Texas, April               | Salvin-Godman Coll. |
| f'. ♀ ad. sk.      | ( <i>F. B. Armstrong</i> ).             |                     |
| g'. ♂ ad.; h', i'. | Tampico, Mexico, June ( <i>W. B.</i>    | Salvin-Godman Coll. |
| ♀ ad. sk.          | <i>Richardson</i> ).                    |                     |

|                           |                                                                |                           |
|---------------------------|----------------------------------------------------------------|---------------------------|
| k'. ♂ hiem. sk.           | Huanasco, Aug. ( <i>Ferrari-Perez</i> ).                       | Salvin-Godman Coll.       |
| l'. Ad. hiem. sk.         |                                                                |                           |
| m', n'. ♂ ♀ hiem. sk.     | Masatlan, Dec., Jan. ( <i>A. Forrer</i> ).                     | Salvin-Godman Coll.       |
| o'. Ad. sk.               | Presidio, April ( <i>A. Forrer</i> ).                          | Salvin-Godman Coll.       |
| p'. Ad. sk.               | Cozumel Island ( <i>G. F. Gaumer</i> ).                        | Salvin-Godman Coll.       |
| q'. Juv. sk.              | Merida, Yucatan, May 15 ( <i>G. F. Gaumer</i> ).               | Salvin-Godman Coll.       |
| r'. Æstiv. sk.            | Belize, British Honduras ( <i>F. Blancaneaux</i> ).            | Salvin-Godman Coll.       |
| s'. Hiem. sk.             | Dueñas, Guatemala ( <i>O. Salvin</i> ).                        | Salvin-Godman Coll.       |
| t'. Æstiv. sk.            | Coban, Guatemala ( <i>O. Salvin</i> ).                         | Salvin-Godman Coll.       |
| u'. Hiem. sk.             | Chispam, Guatemala, Jan. ( <i>O. Salvin</i> ).                 | Salvin-Godman Coll.       |
| v'. ♂ æstiv. sk.          | Lion Hill, Panama ( <i>J. McLean-nan</i> ).                    | Salvin-Godman Coll.       |
| w', x'. Æstiv. sk.        | Balzar Mountains, Ecuador ( <i>Illingworth</i> ).              | Salvin-Godman Coll.       |
| y'. Ad. hiem. sk.         | Haiti.                                                         | Baron Maltzam [C.].       |
| z'. Hiem. sk.             | Montserrat, West Indies ( <i>Sturge</i> ).                     | Salvin-Godman Coll.       |
| a''. ♀ juv. sk.           | Bartica Grove, British Guiana, Nov. 29 ( <i>H. Whiteley</i> ). | Salvin-Godman Coll.       |
| b''. Hiem. sk.            | British Guiana.                                                | Sir R. Schomburgk [C.].   |
| c''. Æstiv. sk.           | Cayenne.                                                       | H. H. Rothery, Esq. [P.]. |
| d'', e''. Ad. sk.         | Novo Fribourgo, Prov. Rio de Janeiro ( <i>J. Youds</i> ).      | Salvin-Godman Coll.       |
| f'', g''. Æstiv. sk.      | Bahia, Brazil ( <i>Dr. Wucherer</i> ).                         | Salvin-Godman Coll.       |
| h''. ♂ hiem. sk.          | Pausuco, June 20 ( <i>J. Natterer</i> ).                       | Salvin-Godman Coll.       |
| i''. Æstiv. sk.           | Lajan Bridge, Campana Railway, Buenos Ayres, Dec. 24.          | W. Durnford, Esq. [C.].   |
| k'', l''. Ad. hiem. sk.   | Central Chili.                                                 | Berkeley James Coll.      |
| m''. ♂ æstiv. sk.         | Sitani, Tarapacá, Jan. 19 ( <i>A. B. Lane</i> ).               | Berkeley James Coll.      |
| n''. ♂ hiem. sk.          | Sacaya, Tarapacá, April 6 ( <i>A. B. Lane</i> ).               | Berkeley James Coll.      |
| o''. Skeleton.            | Chili.                                                         | Purchased.                |
| p'', q'', r''. Skeletons. | S. America.                                                    | Purchased.                |

## 12. HYDRANASSA.

Hydranassa, *Baird, B. N. Amer.* p. 660 (1858) ..... Type. *H. tricolor*.

*Range.* Temperate Eastern North America, to the West Indies, and throughout Central America to Venezuela, Guiana, and Brazil.

## 1. Hydranassa tricolor.

Héron bleuâtre à ventre blanc, de Cayenne, *D'Aubent. Pl. Enl.* viii. pl. 350.

*Ardea tricolor*, *P. L. S. Müll. S. N., Anhang*, p. 111 (1776); *Cass. Proc. Philad. Acad.* 1864, p. 245; *Gray, Hand-l. B.* iii. p. 29, no. 10130 (1871: Cayenne); *Salvin, Ibis*, 1886, p. 109 (British Guiana); *Hartert, Ibis*, 1893, p. 307 (Aruba).

*La Demi-Aigrette*, *Buff. Hist. Nat. Ois.* vii. p. 378 (1780: Cayenne).

*Ardea leucogaster*, *Bodd. Tabl. Pl. Enl.* p. 21 (1783); *Gm. Syst. Nat.* i. p. 628 (1788: Cayenne); *Wagl. Syst. Av.*, *Ardea*, p. 179, sp. 14 pt. (1827); *Cab. in Schomb. Reis. Guian.* iii. p. 753 (1848); *Schl. Mus. Pays-Bas*, *Ardeæ*, p. 9 (1863: S. America); *Pelz. Orn. Bras.* pp. 301, 455 (1871; Cajutuba); *Scl. & Salv. Nomencl. Av. Neotr.* p. 125 (1873); *Reichen. J. f. O.* 1877, p. 269.

*Demi-Egret*, *Lath. Gen. Syn.* iii. pt. 1, p. 88 (1785: Cayenne).

*Egretta leucogastra*, *Licht. Nomencl. Av. Mus. Berol.* p. 89 (1854: S. America).

*Herodias leucogaster*, *Bp. Consp. Av.* ii. p. 124 (1855).

*Hydranassa leucogastra*, *Heine & Reichen. Nomencl. Mus. Hein.* p. 307 (1890: Guiana).

? *Hydranassa ludoviciana* (pt.), *Heine & Reichen. t. c.* p. 307 (Venezuela).

*Adult.* Said by Mr. Ridgway to be similar to *H. ruficollis* (described in full below), but very much smaller, decidedly darker, the neck being in some specimens plumbeous black, in others dark plumbeous, and the ferruginous colour of throat very deep.

*Hab.* Guiana and Brazil, and probably extending to Venezuela.

I have not seen a specimen of what Mr. Ridgway considers to be the true *H. tricolor*, and derive my characters from his observations in the 'Water-Birds of North America.'

## 2. *Hydranassa ruficollis*.

*Ardea ludoviciana* (nec Gm.), *Wilson, Amer. Orn.* viii. p. 13, pl. lxiv. fig. 1 (1814); *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 430 (1817: N. America); *Audub. B. Amer.* pl. ccxvii. (c. 1826); *id. Orn. Biogr.* iii. p. 136 (1835), v. p. 605 (1839); *id. B. Amer.* 8vo, vi. p. 156, pl. 373 (1843); *Scl. & Salv. Nomencl. Av. Neotr.* p. 125 (1873: Mexico; Guatemala; Antilles); *Reichen. J. f. O.* 1877, p. 269; *Mayn. B. East. N. Amer.* p. 413 (1879); *A. & E. Newt. Handb. Jamaica*, p. 111 (1881); *Salvin, Ibis*, 1889, p. 376 (Cozumel Island); *W. Evans, Ibis*, 1891, p. 70 (incubation).

*Louisiana Heron*, *Nutt. Man. Orn.* ii. p. 51 (1834).

*Egretta ludoviciana* (nec Gm.), *Bp. Comp. List B. Eur. & N. Amer.* p. 47 (1838).

*Ardea leucogaster* (nec Gm.), *D'Orbign. in Ramon de la Sagra, Hist. Nat. Cuba*, iii. Ois. p. 144 (1839); *Gray, Gen. B.* iii. p. 556 (1847).

*Herodias leucogaster* (nec Gm.), *Gray, List Grall. Brit. Mus.* p. 79 (1844: N. America).

*Egretta ruficollis*, *Gosse, B. Jamaica*, p. 338, pl. 93 (1847: young); *Albrecht, J. f. O.* 1862, p. 205 (Jamaica).

*Egretta leucoprymna*, *Licht. Nomencl. Av. Mus. Berol.* p. 89 (1854: Mexico).

*Herodias ludoviciana* (nec Gm.), *Bp. Consp. Av.* ii. p. 124 (1855); *Brewer, Proc. Bost. Soc. N. H.* vii. p. 308 (1860: Cuba).

*Demiegretta ludoviciana* (nec Gm.), *Baird, B. N. Amer.* p. 663 (1858); *Scl. P. Z. S.* 1860, p. 253 (Mexico); *March, Proc. Philad. Acad.* 1864, p. 63 (Jamaica); *Dresser, Ibis*, 1866, p. 36 (San Antonio, Texas); *Salvin, t. c.* p. 196 (Guatemala); *Allen, Bull. Harv. Coll.* ii. p. 358 (1871: Florida).

*Herodias ruficollis*, *Gundl. J. f. O.* 1862, p. 83 (Cuba).

*Demiegretta ruficollis*, *Gundl. Repert. Fisico-Nat. Cuba*, i. p. 348

- (1866); *id.* *J. f. O.* 1875, p. 303 (Cuba); *id.* *Anal. Soc. Esp. Hist. Nat.* vii. p. 356 (1878: Porto Rico).
- Ardea leucoprymna*, Gray, *Hand-l. B.* iii. p. 29, no. 10129 (1871).
- Ardea leucogastra*, var. *leucoprymna*, Coues, *Key N. Amer. B.* p. 208 (1872); *Cory, B. Bahamas*, p. 168 (1880), 2nd ed. p. 168 (1890).
- Demiegretta leucoprymna*, Lawr. *Mem. Bost. Soc. N. H.* ii. p. 310 (1874: Mazatlan; Manzanilla Bay).
- Demiegretta leucogastra*, var. *leucoprymna*, Lawr. *Bull. U.S. Nat. Mus.* iv. p. 48 (1876: Tehuantepec City).
- Hydranassa tricolor* (*nec P. L. S. Müll.*), Sennett, *Bull. U.S. Geol. Surv.* iv. p. 80 (1878: Brownsville, Texas: breeding); Coues, *Check-l. N. Amer. B.* p. 106 (1882); *id.* *Key N. Amer. B.* 2nd ed. p. 660 (1884).
- Ardea cyanirostris*, Cory, *B. Bahamas*, p. 168 (1880); Allen, *Bull. Nutt. Orn. Club*, vii. p. 21 (1881); Cory, *List B. West Ind.* p. 28 (1885); *id.* *B. Bahamas*, 2nd ed. p. 168, pl. 5 (1890).
- Hydranassa tricolor ludoviciana*, Belding, *Proc. U.S. Nat. Mus.* v. pp. 544, 548 (1882: Lower California), Nutting, *op. cit.* vii. p. 379 (1884: Nicaragua); Ridgw. *op. cit.* viii. p. 355 (1885).
- Ardea tricolor ruficollis*, Ridgw. *Proc. U.S. Nat. Mus.* viii. p. 355 (1885), ix. p. 109 (1886); Cory, *Auk*, iii. p. 502 (1886: Grand Cayman); A. O. U. *Check-l. N. Amer. B.* p. 137 (1886); Ridgw. *Man. N. Amer. B.* p. 131 (1887); Cory, *Auk*, iv. p. 183 (1887: Old Providence), p. 327 (Bahamas); Beckh. *Proc. U.S. Nat. Mus.* x. p. 636 (1887: Bexar Co., Texas), p. 649 (Matamoros: San Antonio), Chapm. *Auk*, v. p. 209 (1888: Gainesville, Florida); Scott, *Auk*, vi. p. 15 (1889: Gulf Coast of Florida); Cory, *B. West Ind.* p. 248 (1889); Northrop, *Auk*, viii. p. 77 (1891: Andros Isl.); Brewst. & Chapm. *t. c.* p. 137 (Suwanee River); Cory, *t. c.* p. 295 (Berry Isl., Bahamas), p. 297 (Caicos Isl.); Ridgw. *t. c.* p. 337 (Watling's Isl.); Cory, *Cat. B. West Ind.* p. 89 (1892); Scott, *Auk*, ix. p. 10 (1892: Jamaica); Cory, *t. c.* p. 48 (Maraguana Isl.); Scott, *t. c.* p. 211 (Florida); Allen, *Auk*, x. p. 132 (1893); Richmond, *Proc. U.S. Nat. Mus.* xvi. p. 527 (1893: Escondido River, Nicaragua).
- Ardea tricolor* (*nec P. L. S. Müll.*), Cory, *List B. West Ind.* p. 28 (1885); *id.* *Auk*, iv. pp. 327, 328 (1887: Bahamas & Greater Antilles).
- Hydranassa ludoviciana*, Heine & Reichen. *Nomencl. Mus. Hein.* p. 307 (1890: Texas; Central America).

*Adult male in breeding-plumage.* General colour above slaty grey, with a gloss of purplish lilac on the feathers, the whole of the upper surface having somewhat of a hoary appearance, the long ornamental scapular plumes of a brown or whity-brown colour; lower back, rump, and upper tail-coverts white, the latter slaty grey at the ends; wings and tail entirely slaty grey, the latter with white shafts near the base; head and neck dark slate-colour, the lanceolate feathers on the sides of the neck glossed with purplish lilac; a nuchal crest of purplish-lilac plumes, with the long central ones white; lores and feathers on the sides of the face blackish; chin and upper throat white, the lower throat rusty rufous, with a line of rufous and white plumes forming a streak down the centre of the throat, the overhanging feathers on the sides of the chest being partly white and some of them half grey and half white; the remainder of the under surface pure white, including the under wing-coverts and

axillaries, the under tail-coverts white, with slaty-grey tips: "bill black for the terminal third or more, the rest sky-blue, shading into lilac at the base, the latter colour extending to the eye; feet slate-colour; iris red" (*C. B. Cory*). Total length about 24 inches, culmen 3·8, wing 10·2, tail 3, tarsus 3·9, middle toe and claw 3·1.

*Adult female*. Similar to the male in colour. Total length about 24 inches, culmen 3·8, wing 9·8, tail 3, tarsus 3·4, middle toe and claw 2·9.

*Young*. Differs from the adult in being darker slate-colour above all the feathers washed with maroon or chestnut; lower back, rump, upper tail-coverts, and base of tail white; the crown of the head (which has the remains of sandy-buff down) slaty brown, as also the sides of face, ear-coverts, and sides of neck; cheeks and throat white, washed with maroon on the lower part and varied with small dusky streaks, the lateral patch on the sides of the chest blackish, with broad white edgings to the feathers, the longer feathers externally marked with blackish, as also some of the breast-plumes.

The full-grown young birds preserve the characters mentioned above, but the rufous colour gradually disappears and the central line of the lower throat and fore-neck becomes strongly marked, the feathers being maroon with white bases.

The winter plumage of the adults only differs from the summer plumage in the want of the ornamental plumes; the scapulars grey and only slightly elongated; the nuchal crest is also absent, and the beautiful purple on the neck is not developed to any extent: "bill brownish black on the greater part of the upper mandible, and on the sides of the lower mandible towards the point, the rest yellow, as is the bare space before and around the eye; feet light yellowish green, the anterior scutellæ dusky, as are the claws; iris bright red" (*J. J. Audubon*).

*Hab.* From New Jersey and Indiana, south through temperate Eastern North America to Central America and the West Indies; Cape S. Lucas (*Ridgway*).

|                                        |                                                                              |                     |
|----------------------------------------|------------------------------------------------------------------------------|---------------------|
| <i>a.</i> Juv. st.                     | North America.                                                               | Purchased.          |
| <i>b.</i> ♂ ad. sk.                    | Hilton Wood, South Carolina<br>( <i>Dr. W. Prentiss: Hensh. Coll.</i> ).     | Salvin-Godman Coll. |
| <i>c.</i> ♀ ad. sk.                    | Oklawaha River, Florida,<br>April 20 ( <i>C. H. Merriam: Hensh. Coll.</i> ). | Salvin-Godman Coll. |
| <i>d.</i> ♂ ad. sk.                    | Cedar Keys, Nov. 8 ( <i>H. W. Henshaw</i> ).                                 | Salvin-Godman Coll. |
| <i>e.</i> ♂ ad. sk.                    | Arsenica Key, Florida, April 26<br>( <i>W. Brewster: Hensh. Coll.</i> ).     | Salvin-Godman Coll. |
| <i>f.</i> Juv. sk.                     | Tampa, Florida, June 28<br>( <i>Henshaw Coll.</i> ).                         | Salvin-Godman Coll. |
| <i>g-k.</i> ♂ ad.; <i>l.</i> ♀ ad. sk. | Tarpon Springs, Florida, Jan.,<br>May, July, Aug. ( <i>W. E. D. Scott</i> ). | Salvin-Godman Coll. |
| <i>m-e'.</i> ♂ juv. sk.                | Tarpon Springs, June, August<br>( <i>W. E. D. Scott</i> ).                   | Salvin-Godman Coll. |

|                                                                                |                                                                   |                                                 |
|--------------------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------|
| <i>f'</i> - <i>e'</i> . ♀ juv. sk.                                             | Tarpon Springs, June, July, Aug., Oct. ( <i>W. E. D. Scott</i> ). | Salvin-Godman Coll.                             |
| <i>a''</i> . ♂ ad.; <i>b''</i> <i>e''</i> . ♀ ad. sk.                          | Punta Rassa, Florida, May ( <i>W. E. D. Scott</i> ).              | Salvin-Godman Coll.                             |
| <i>f''</i> . Juv. sk.                                                          | San Antonio, Texas ( <i>H. E. Dresser</i> ).                      | Salvin-Godman Coll.                             |
| <i>g''</i> . ♂ ad. sk.                                                         | Corpus Christi Pass, May 24 ( <i>F. B. Armstrong</i> ).           | Salvin-Godman Coll.                             |
| <i>h''</i> - <i>n''</i> . ♂ ad. sk.                                            | Aransas Bay ( <i>F. B. Armstrong</i> ).                           | Salvin-Godman Coll.                             |
| <i>o''</i> , <i>p''</i> . ♂, <i>q''</i> . ♀ ad. sk.                            | Presidio, Mexico, Jan., May ( <i>A. Forrer</i> ).                 | Salvin-Godman Coll.                             |
| <i>r''</i> - <i>u''</i> . ♂ ad. sk.                                            | Tampico, June 1 ( <i>W. B. Richardson</i> ).                      | Salvin-Godman Coll.                             |
| <i>v''</i> , <i>w''</i> . Ad. sk.                                              | Playa Vicente, Vera Cruz ( <i>M. Trujillo</i> ).                  | Salvin-Godman Coll.                             |
| <i>x''</i> . Juv. sk.                                                          | South Mexico ( <i>Sallé</i> ).                                    | Salvin-Godman Coll.                             |
| <i>y''</i> - <i>e''</i> . Ad.; <i>f''</i> , <i>g''</i> , <i>h''</i> . Juv. sk. | Cozumel Island, Yucatan ( <i>G. F. Gaumer</i> ).                  | Salvin-Godman Coll.                             |
| <i>i''</i> . Juv. sk.                                                          | Turneff, Belize, British Honduras, May ( <i>O. S.</i> ).          | Salvin-Godman Coll.                             |
| <i>k''</i> . Ad. sk.                                                           | San José de Guatemala, Jan. ( <i>O. S.</i> ).                     | Salvin-Godman Coll.                             |
| <i>l''</i> . Ad. sk.                                                           | Huamuchal, Guatemala, Feb. ( <i>O. S.</i> ).                      | Salvin-Godman Coll.                             |
| <i>m''</i> . ♂ juv. sk.                                                        | Lion Hill, Panama ( <i>J. McLeannan</i> ).                        | Salvin-Godman Coll.                             |
| <i>n''</i> , <i>o''</i> . ♂, <i>p''</i> . ♀ ad. sk.                            | Momotombo, Nicaragua, May 21 ( <i>W. B. Richardson</i> ).         | Salvin-Godman Coll.                             |
| <i>q''</i> . Juv. st.                                                          | Jamaica.                                                          | Gosse Coll.<br>(Type of <i>A. ruficollis</i> .) |
| <i>r''</i> . ♂ ad. sk.                                                         | Grenada, W. I., April 17 ( <i>D. W. Smith</i> ).                  | Salvin-Godman Coll.                             |

## 13. NYCTANASSA.

Type.

|                                                                                               |                      |
|-----------------------------------------------------------------------------------------------|----------------------|
| <i>Nyctherodius</i> , <i>Reichenb. Av. Nat. Syst.</i> p. xvi (1852, nec <i>Macgill</i> )..... | <i>N. violacea</i> . |
| <i>Nyctanassa</i> , <i>Stejn. Proc. U.S. Nat. Mus.</i> x. p. 295, note (1887).....            | <i>N. violacea</i> . |

*Range.* Warm temperate Eastern North America, Central America, West Indies, Northern South America to Brazil.

*Key to the Species.*

- a.* Crown of head white or ochreous brown; sides of head and throat black, with a white band along the ear-coverts..... *violacea*, p. 130.
- b.* Crown black like the sides of the head, with a rufous band across the ear-coverts..... *pauper*, p. 134.

1. *Nyctanassa violacea*.

The Crested Bittern, *Catesby, Nat. Hist. Carol.* i. pl. 79 (1731).  
Le Crabier de Bahama, *Briss. Orn.* v. p. 481 (1760).

- Ardea violacea*, *Linn. Syst. Nat.* i. p. 238 (1766); *Gm. Syst. Nat.* i. p. 631 (1788); *Wilson, Amer. Orn.* viii. p. 26, pl. lxxv. fig. 1 (1814); *Audub. B. Amer.* pl. cccxxxvi. (c. 1826); *id. Orn. Biogr.* iv. p. 290 (1838); *id. B. Amer.* 8vo, vi. p. 89, pl. 364 (1843); *Burm. Th. Bras.* iii. p. 407 (1856); *Schl. Mus. Pays-Bas*, Ardeæ, p. 61 (1863: New Jersey; Mexico; S. America; Cayenne; Surinam); *Sundev. Öfv. K. Vet.-Akad. Förhandl.* 1869, p. 589 (St. Bartholomew), p. 603 (Porto Rico).
- Biboreau de Cayenne, *Daubent. Pl. Enl.* viii. pl. 899; *Buff. Hist. Nat. Ois.* vii. p. 439 (1780).
- Le Crabier gris-de-fer, *Buff. Hist. Nat. Ois.* vii. p. 339 (1780).
- Cayenne Night Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 56 (1785).
- Yellow-crowned Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 80 (1785).
- Ardea jamaicensis*, *Gm. Syst. Nat.* i. p. 625 (1788).
- Ardea cayennensis*, *Gm. Syst. Nat.* i. p. 626 (1788).
- Ardea sexsetacea*, *Vieill. Enc. Méth.* iii. p. 1130 (1823).
- Nycticorax violaceus*, *Boie, Isis*, 1826, p. 979; *D'Orbign. in Ramon de la Sagra, Hist. Nat. Cuba*, p. 213 (1839); *Gray, Gen. B.* iii. p. 558 (1847); *Denny, P. Z. S.* 1847, p. 39 (Jamaica); *Cab. in Schomb. Reis. Guian.* iii. p. 754 (1848); *Bryant, Proc. Bost. Soc. N. H.* vii. p. 120 (1859: Bahamas); *Brewer, t. c.* p. 308 (Cuba); *Scl. P. Z. S.* 1861, pp. 70, 81 (Jamaica); *Salvin, Ibis*, 1861, p. 357 (Guatemala); *E. C. Taylor, Ibis*, 1864, p. 95 (Trinidad); *Salvin, Ibis*, 1865, p. 191; *Léotaud, Ois. Trinid.* p. 433 (1866); *Baird, Ibis*, 1867, p. 285; *Scl. P. Z. S.* 1871, p. 273 (Santa Lucia); *Pelz. Orn. Bras.* pp. 303, 456 (1871: Sapitiba; Paranagua; Cajutuba); *Semper, P. Z. S.* 1872, p. 652 (Santa Lucia); *Pelz. Ibis*, 1873, p. 121 (Cayenne); *Scl. & Salv. Nomencl. Av. Neotrop.* p. 126 (1873); *Tacz. P. Z. S.* 1877, p. 746 (W. Peru); *A. & E. Newton, Handb. Jamaica*, p. 111 (1881); *Tacz. & Berlepsch, P. Z. S.* 1885, pp. 119, 124 (Babahoyo); *Cory, Auk*, iii. p. 502 (1886: Grand Cayman); *Ferrari-Perez, Pr. U.S. Nat. Mus.* ix. p. 170 (1886: Tlaxcala; Vera Cruz); *Grant Wells, t. c.* p. 627 (Grenada, breeding); *A. O. U. Check-l. N. Amer. B.* p. 138 (1886); *Tacz. Orn. Pérou*, iii. p. 405 (1886); *Scott, Auk*, iv. pp. 136, 281 (1887: Gulf Coast, Florida); *Ridgw. Man. N. Amer. B.* p. 133 (1887); *Cory, Auk*, v. p. 48 (1888: West Indies); *Salvin, Ibis*, 1889, p. 376 (Cozumel Is.); *Cory, B. West Ind.* p. 249 (1889); *Scott, Auk*, v. p. 18 (1889: Tarpon Springs, breeding); *Shufeldt, Journ. Comp. Med. & Surg.* July & Oct. 1889; *Scott, Auk*, vii. p. 308 (1890: Dry Tortugas, breeding); *Cherrie, t. c.* p. 337 (Costa Rica, Aug. to Oct.); *Townsend, Pr. U.S. Nat. Mus.* xiii. p. 135 (1890: Socorro Is.); *Cory, Auk*, viii. p. 47 (1891: St. Croix), p. 48 (St. Kitts); *Northrop, t. c.* p. 78 (Andros Is.); *Brewst. & Chapm. t. c.* p. 137 (Suwanee River); *Gundl. t. c.* p. 190 (Cuba); *Cory, t. c.* p. 295 (Berry Is.); *Ridgw. t. c.* p. 339 (Concepcion Is., Bahamas); *Cory, t. c.* p. 351 (Inagua); *Scott, Auk*, ix. p. 10 (1892: Jamaica); *Cory, t. c.* p. 48 (Maraquana); *Scott, t. c.* p. 212 (Caloosahatchie Region); *Attwater, t. c.* p. 232 (San Antonio, Texas); *Cherrie, t. c.* p. 329 (San José, Costa Rica); *Hatch, B. Minnesota*, p. 96 (1892); *Allen, Auk*, x. p. 132 (1893); *Brimley, t. c.* p. 243 (N. Carolina); *Dutcher, t. c.* p. 266 (Long Is., April).
- Ardea callocephala*, *Wagl. Syst. Ar.*, Ardea, p. 189, sp. 34 (1827).
- Nyctiardea violacea*, *Swains. Classif. B.* ii. p. 354 (1837); *Gray, Hand-l. B.* iii. p. 33, no. 10179 (1871); *Coues, Key N. Amer. B.* p. 269 (1872); *Lawr. Pr. U.S. Nat. Mus.* i. p. 275 (1878: Grenada), p. 460 (Guadaloupe); *id. op. cit.* iii. p. 257 (1880: Dominica);



- Allen, Bull. Nutt. Orn. Club*, v. p. 169 (1880: Santa Lucia); *Cory, B. Bahamas*, p. 173 (1880); *id. List B. West Indies*, p. 28 (1885); *id. Auk*, iv. p. 96 (1887: Martinique); *Scl. P. Z. S.* 1889, p. 326 (Dominica), p. 395 (Santa Lucia).
- Nyctherodius violaceus*, *Reichenb. Ar. Syst. Nat.* p. xvi (1852); *Bp. Consp. Ar.* ii. p. 112 (1855); *Baird, B. N. Amer.* p. 679 (1858); *Moore, P. Z. S.* 1859, p. 63 (Omoa); *A. & E. Newton, Ibis*, 1859, p. 262 (St. Croix); *Cass. Proc. Phil. Acad.* 1860, p. 379 (St. Thomas); *March, op. cit.* 1864, p. 65 (Jamaica); *Dresser, Ibis*, 1866, p. 32 (S. Texas); *Gundl. Repert. Físico-Nat. Cuba*, i. p. 351 (1866); *Lawr. Ann. Lyc. N. Y.* viii. p. 98 (1867: Sombrero); *Gundl. J. f. O.* 1875, p. 311 (Cuba); *id. Anal. Soc. Esp. Hist. Nat.* vii. p. 363 (1878: Porto Rico); *Merrill, Pr. U.S. Nat. Mus.* i. p. 165 (1878: Fort Brown, Texas, breeding); *Ridgw. Pr. U.S. Nat. Mus.* iii. p. 179 (1880); *id. Bull. Nutt. Orn. Club*, vii. pp. 18, 22 (1882: Indiana, breeding); *Belding, Pr. U.S. Nat. Mus.* v. p. 544 (1882: Lower Cal.), p. 548 (San José); *Bailey, Bull. Nutt. Orn. Club*, viii. p. 42 (1883: Georgia, breeding); *Nutting, Pr. U.S. Nat. Mus.* vi. p. 379 (1883: Nicaragua); *Baird, Brewer, & Ridgw. Water-Birds N. Amer.* i. p. 61 (1884); *Zeledon, Pr. U.S. Nat. Mus.* viii. p. 119 (1885: Costa Rica); *Drew, Auk*, ii. p. 18 (1885: Colorado); *Wells, List B. Grenada*, p. 9 (1886); *Salvin, Ibis*, 1886, p. 170 (British Guiana).
- Nyctherodius violaceus*, *J. H. Blasius, Ibis*, 1861, p. 294; *Coues, Checklist N. Amer. B.* p. 107 (1882); *id. Key N. Amer. B.* 2nd ed. p. 663 (1884).

*Adult male in breeding-plumage.* General colour above slaty blue, all the feathers of the upper surface longitudinally centred with black, including the elongated scapular plumes, some of the dorsal feathers inclining to hoary grey on the margins; lower back and rump uniform slaty blue; upper tail-coverts dusky with slaty-grey margins; wing-coverts slaty blue centred with black, inclining to hoary grey on the median and greater series; bastard-wing, primary-coverts, and quills dark slate-colour, the former with narrow whitish edgings; inner secondaries like the back; tail-feathers dark slate-colour, narrowly margined with hoary grey; head crested; centre of crown pure white; rest of the crown, cheeks, and upper throat black, joining on the nape and extending a little way down the hind-neck; the elongated feathers on the nape black, but having two long white plumes also; a broad white band from below the eye across the ear-coverts; under surface of body from the middle of the throat downwards, as well as the neck, slaty blue, inclining to whitish on the abdomen and lavender-grey on the thighs and under tail-coverts; axillaries and under wing-coverts slaty blue: "bill deep black, the lower basal portion of the mandible in some specimens greenish yellow; lores and eyelids greenish yellow; feet dull yellowish green, the large scutellæ and the claws dusky; iris pale orange" (*R. Ridgway*). Total length 22 inches, culmen 3, wing 11.6, tail 4.4, tarsus 3.8.

*Adult female in breeding-plumage.* Similar to the male, but somewhat browner, and with all the long nape-plumes white: "bill and naked lores wholly slate-black, the eyelids similar, but tinged with green anteriorly; feet pale olive-buff, the large scutellæ of the tarsus

and toes deep brownish ; iris Mars-orange " (*R. Ridgway*). Total length about 19 inches, culmen 2·8, wing 11·6, tail 3·9, tarsus 3·9.

*Adult male in winter plumage.* Differs from the summer plumage chiefly in wanting the long plumes of the nape ; the scapular plumes also not so developed.

The tawny or brown shade upon the head seems to me characteristic of the birds of the second year, as the white band on the sides of the head is also tinged with tawny buff, and there is a certain amount of rufous on the feathers of the throat and chest.

*Young.* Differs from the adult in being brown and having small triangular spots of rufous-brown or buff to all the feathers of the upper surface ; the head and crest black with longitudinal brown centres to the feathers ; sides of face and sides of neck brown, strongly streaked with white ; throat white ; rest of under surface of body white, with an ochreous tinge and thickly streaked with black, less distinctly on the abdomen, which is thickly marked with ovate spots : " bill greenish black, the lower and basal part of the lower mandible greenish yellow, as are the eyelids and bare space before the eye ; legs and feet dull yellowish green, the scutellæ and scales in front as well as the claws dusky ; iris pale orange " (*J. J. Audubon*).

*Hab.* The same as that given above for the genus.

|                                                 |                                                                                    |                            |
|-------------------------------------------------|------------------------------------------------------------------------------------|----------------------------|
| <i>a.</i> ♂ ad. sk.                             | Wheatland, Indiana, May 3<br>( <i>R. Ridgway</i> : <i>Henshaw Coll.</i> ).         | Salvin-Godman Coll.        |
| <i>b, c.</i> ♀ ad. sk.                          | Wabash Co., Illinois, April 30<br>( <i>J. L. Ridgway</i> : <i>Henshaw Coll.</i> ). | Salvin-Godman Coll.        |
| <i>d.</i> Juv. sk.                              | Bermuda.                                                                           | Capt. Savile Reid<br>[C.]. |
| <i>e, f.</i> ♂ ad. ; <i>g.</i> Juv. sk.         | Tampa, Florida, Jan. 6, 1883<br>( <i>Henshaw Coll.</i> ).                          | Salvin-Godman Coll.        |
| <i>h, i.</i> ♀ ad. et juv. sk.                  | Palm Key, Sarasota Bay, Florida, March 3 ( <i>W. S. Dickenson</i> ).               | Salvin-Godman Coll.        |
| <i>k, l.</i> ♂ ; <i>m-q.</i> ♀ juv. sk.         | Tarpon Springs, Florida, July, Aug. ( <i>W. E. D. Scott</i> ).                     | Salvin-Godman Coll.        |
| <i>r, s.</i> Ad. et juv. sk.                    | San Antonio, Texas ( <i>H. E. Dresser</i> ).                                       | Salvin-Godman Coll.        |
| <i>t, u, v.</i> ♂ ; <i>w, x.</i> ♀ ad. sk.      | Nueces Co., Texas, June ( <i>F. B. Armstrong</i> ).                                | Salvin-Godman Coll.        |
| <i>y, z.</i> ♂ ♀ ad. ; <i>a'.</i> ♀ juv. sk.    | Presidio, Mexico, March, May, Nov. ( <i>A. Forrer</i> ).                           | Salvin-Godman Coll.        |
| <i>b', c'.</i> ♂ ♀ ad. ; <i>d'.</i> ♂ juv. sk.  | Mazatlan, Nov., Dec. ( <i>A. Forrer</i> ).                                         | Salvin-Godman Coll.        |
| <i>e'.</i> ♂ ad. sk.                            | Tampico, Tamaulipas, March<br>( <i>W. B. Richardson</i> ).                         | Salvin-Godman Coll.        |
| <i>f', g'.</i> ♂ ad. et juv. sk.                | La Antigua, Vera Cruz, Sept.<br>( <i>M. Trujillo</i> ).                            | Salvin-Godman Coll.        |
| <i>h'.</i> Ad. sk.                              | South Mexico ( <i>A. Sallé</i> ).                                                  | Salvin-Godman Coll.        |
| <i>i'-s'.</i> Ad. ; <i>t'-w'.</i> juv. sk.      | Cozumel Island ( <i>G. F. Gaumer</i> ).                                            | Salvin-Godman Coll.        |
| <i>x', y'.</i> Ad. ; <i>z', a''.</i> ♂ juv. sk. | Chiapam, Guatemala, Jan.<br>( <i>O. S.</i> ).                                      | Salvin-Godman Coll.        |
| <i>c''.</i> Ad. sk.                             | Guatemala.                                                                         | Tweeddale Coll.            |

|                              |                                                              |                                        |
|------------------------------|--------------------------------------------------------------|----------------------------------------|
| d'. Ad. sk.                  | Costa Rica ( <i>E. Araf.</i> ).                              | Salvin-Godman Coll.                    |
| e'. Ad. sk.                  | Panama.                                                      | Capt. Kellett and<br>Lieut. Wood [C.]. |
| f". ♀ juv. sk.               | Bemba, Cuba ( <i>G. F. Gummer</i> ).                         | Salvin-Godman Coll.                    |
| g'. Juv. sk.                 | Santa Lucia ( <i>J. Semper</i> ).                            | Salvin-Godman Coll.                    |
| h". ♀ juv. sk.               | Santa Lucia, March 26.                                       | J. Ramage, Esq. [P.].                  |
| i". ♂ ad.; k". ♀<br>juv. sk. | Dominica, Feb.                                               | J. Ramage, Esq. [P.].                  |
| l'. Ad. st.                  | Nevis.                                                       | W. Cottle, Esq. [P.].                  |
| m". ♂ ad. sk.                | Virgin Gorda, Dec. 7 ( <i>C. S.<br/>Winch. Cory Coll.</i> ). | Salvin-Godman Coll.                    |
| n"-u". Ad. et<br>imm. sk.    | S. Vincent, July Nov. ( <i>D. W.<br/>Smith</i> ).            | Salvin-Godman Coll.                    |
| v"-z". Ad. et<br>imm. sk.    | Grenada, March, June ( <i>D. W.<br/>Smith</i> ).             | Salvin-Godman Coll.                    |
| a <sup>3</sup> . ♀ ad. sk.   | Mustique Isl., June 3 ( <i>D. W.<br/>Smith</i> ).            | Salvin-Godman Coll.                    |
| b'. ♂ imm. sk.               | Grenadines, May ( <i>D. W. Smith</i> ).                      | Salvin-Godman Coll.                    |
| c'. Ad. sk.                  | Bahia, Brazil ( <i>Dr. Wucherer</i> ).                       | Salvin-Godman Coll.                    |
| d <sup>2</sup> . ♀ ad. sk.   | Santa Catarina, Brazil ( <i>H.<br/>Rogers</i> ).             | Salvin-Godman Coll.                    |
| e <sup>2</sup> . Skeleton.   | North America.                                               | Purchased.                             |
| f <sup>2</sup> . Skeleton.   |                                                              | Purchased.                             |

## 2. *Nyctanassa pauper*. (Plate I. c.)

*Nycticorax violaceus* (*nec L.*), *Gould in Darwin's Voy. 'Beagle,' Birds*, p. 126 (1841: Galapagos).

*Nycticorax pauper*, *Scl. & Salv. P. Z. S.* 1870, pp. 323, 327 (Indefatigable Isl.); *ibid. Nomencl. Av. Neotrop.* p. 126 (1873); *Salv. Trans. Z. S.* ix. pp. 464, 498 (1876: Indefatigable Isl.); *Ridgw. Proc. U.S. Nat. Mus.* xii. p. 114 (1889: Hood Isl.; Indefatigable Isl.).

*Ardea violacea* var., *Sunder. P. Z. S.* 1871, pp. 125, 128 (Galapagos).

*Male* (not quite adult) (type of species). Similar to *N. violacea*, but very much darker, so that the black centres to the feathers of the upper surface are scarcely visible; crown of head black, with a little rufous above the lores and a rufous streak across the ear-coverts, the remainder of the sides of the face being black; fore part of cheeks and chin streaked with black, less distinct on the throat; remainder of under surface rufous buff, with broad dusky blackish centres to the feathers, those of the breast being dark grey, streaked with white down the centre. Total length about 16 inches, culmen 2.7, wing 10.1, tail 4.9, tarsus 3.2.

*Young*. Similar to the young of *N. violacea*, but much darker, and the spots on the upper surface much smaller.

*Hab.* Galapagos Archipelago.

|             |                                  |                         |
|-------------|----------------------------------|-------------------------|
| a. ♂ imm.;  | Indefatigable Island, Galapagos, | Salvin-Godman Coll.     |
| b. Juv. sk. | Aug., Dec. ( <i>Habel</i> ).     | (Types of the species.) |

## 14. AGAMIA.

|                                                                                                        | Type.     |
|--------------------------------------------------------------------------------------------------------|-----------|
| Agamia, <i>Reichenb. Av. Syst. Nat.</i> p. xvi (1852) .....                                            | A. agami. |
| Doryphorus, <i>Reichenow, J. f. O.</i> 1877, p. 259 .....                                              | A. agami. |
| Doriponus, <i>Reichenow, in Heine &amp; Reichen. Nomencl. Mus.</i><br><i>Hein.</i> p. 308 (1890) ..... | A. agami. |

*Range.* From Mexico throughout Central America and South America to Southern Brazil.

1. *Agamia agami*.

- Héron brun de Cayenne, *D'Aubent. Pl. Enl.* viii. pl. 858 (young).  
 Le Héron Agami de Cayenne, *D'Aubent. Pl. Enl.* viii. pl. 859.  
 Le Héron Agami, *Buff. Hist. Nat. Ois.* vii. p. 383 (1780).  
 Agami Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 97 (1785).  
*Ardea agami*, *Gm. Syst. Nat.* i. p. 629 (1788); *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 404 (1817); *Wagl. Syst. Av.*, *Ardea*, p. 182, sp. 21 (1827); *Gray, List Grall. Brit. Mus.* p. 77 (1844: Cayenne; British Guiana); *Tschudi & Cab. Faun. Peruan., Aves*, pp. 50, 297 (1845-46); *Gray, Gen. B.* iii. p. 556 (1847); *Cab. in Schomb. Reis. Guian.* iii. p. 753 (1848); *Burm. Th. Bras.* iii. p. 414 (1856); *Schl. Mus. Pays-Bas*, *Ardeæ*, p. 11 (1863: Cayenne; Surinam; Mexico); *Scl. & Salv. P. Z. S.* 1866, p. 567 (Ucayali), 1867, p. 754 (Yurimaguas); *Gray, Hand-l. B.* iii. p. 29, no. 10131 (1871); *Pelz. Orn. Bras.* pp. 301, 455 (1871: Villa Maria, Aug.; Caicara, Jan.; Matto Grosso, Aug., Oct., Nov.; Barro do Rio Negro, Sept., Oct.); *Scl. & Salv. P. Z. S.* 1873, p. 303 (Nauta); *id. Nomencl. Av. Neotr.* p. 125 (1873); *Layard, Ibis*, 1873, p. 396 (Igaripé, Pará); *Tacz. P. Z. S.* 1882, p. 47 (Yurimaguas); *id. Orn. Pérou*, iii. p. 396 (1886); *Salvin, Ibis*, 1886, p. 170 (British Guiana).  
*Ardea fusca*, *Lath. Ind. Orn.* ii. p. 700 (1790: Cayenne); *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 410 (1817).  
 Brown Heron, *Lath. Gen. Syn. Suppl.* ii. p. 304 (1801).  
*Egretta gamia*, *Swains. Classif. B.* ii. p. 354 (1837).  
*Agamia picta*, *Reichenb. Av. Syst. Nat.* p. xvi, tab. 158. figs. 1026-27 (1852); *Bp. Consp. Av.* ii. p. 127 (1855); *Scl. P. Z. S.* 1862, p. 369 (Mexico).  
*Herodias agami*, *Licht. Nomencl. Av. Mus. Berol.* p. 89 (1854: Brazil; Guiana).  
*Doryphorus agami*, *Reichen. J. f. O.* 1877, p. 259.  
*Doriponus agami*, *Heine & Reichen. Nomencl. Mus. Hein.* p. 308 (1890).

*Adult male.* General colour above glossy dark green, the scapulars with a certain amount of chestnut on their outer webs; wing-coverts like the back, inclining to grey at the ends, which are slightly recurved; feathers in the centre of the lower back slaty blue, with broader long ornamental plumes of pearly grey; quills slaty black on the inner web, slaty grey externally, the inner secondaries dark green like the back; lower back, rump, and upper tail-coverts dark green, the latter powdered with slaty grey; tail-feathers dark slate-colour, lighter slaty grey externally, and slightly washed with green; crown of head, eyebrow, and ear-coverts black, extending in a broad band down the sides of the neck; the forehead and crown shaded with slaty blue, gradually merging into the clear slaty blue of the hinder crown and crest, which is strongly developed

on the hinder neck; throat and feathered part of the cheeks white, the white extending down the throat, and being divided down the centre by a broad line of maroon chestnut, which gradually becomes merged in the dark chestnut-brown colour of the fore-neck; all the feathers of the latter tipped with shaft-stripes of slaty blue, which are somewhat recurved; fore-neck slaty blue, with a broad central line of dark slate-colour, varied with white on the upper part and chestnut on the edges of the lower feathers; under surface of body orange-chestnut, including the thighs, the whole of the breast overshadowed with deep maroon, which is the colour of the overhanging plumes on the side of the breast; under wing-coverts like the breast; quills slaty grey: "upper mandible blackish brown, the lower one, as well as the lores and bare region of the eye, yellow: iris yellow" (*H. Burmeister*). Total length 32 inches, culmen 5·7, wing 10·4, tail 4, tarsus 3·75.

*Young.* Different from the adult, wanting entirely the ornamental grey plumes of the latter. General colour above dark brown, including the feathers of the neck and sides of the head; crown dusky slate-colour, as also a few slightly lengthened nape-plumes; quills and tail slaty black, the coverts and inner secondaries brown like the back; cheeks and throat white, with a median streak of chestnut; remainder of under surface of body creamy buff, the lengthened feathers on the sides of the breast, the sides of the body and flanks, as well as the under wing- and tail-coverts dusky brown, with longitudinal white centres: "upper mandible horn-brown, the lower one green; feet olive-green; iris orange" (*E. L. Layard*).

*Hab.* South America, from Mexico to Peru and Brazil.

|               |                                                                 |                     |
|---------------|-----------------------------------------------------------------|---------------------|
| a, b. Ad. sk. | British Honduras ( <i>Blancaneaux</i> ).                        | Salvin-Godman Coll. |
| c. Ad. sk.    | Peten, Guatemala ( <i>F. Sarg</i> ).                            | Salvin-Godman Coll. |
| d. Juv. sk.   | Veragua ( <i>Arce</i> ).                                        | Salvin-Godman Coll. |
| e. ♀ juv. sk. | Santa Marta, U.S. Colombia,<br>Feb. 28 ( <i>F. A. Simons</i> ). | Salvin-Godman Coll. |
| f. ♂ ad. sk.  | Takutu River, British Guiana,<br>Feb. 25 ( <i>H. Whitely</i> ). | Salvin-Godman Coll. |
| g. ♂ imm. sk. | River Carimang, April 7 ( <i>H.</i><br><i>Whitely</i> ).        | Salvin-Godman Coll. |
| h. ♀ ad. sk.  | Camacusa, British Guiana, April<br>20 ( <i>H. W.</i> ).         | Salvin-Godman Coll. |
| i. Ad. st.    | Cayenne.                                                        | Purchased.          |
| k. Ad. sk.    | Cayenne.                                                        | Tweeddale Coll.     |
| l. Juv. sk.   | Para, Oct. 16 ( <i>E. L. Layard</i> ).                          | Tweeddale Coll.     |
| m. Ad. sk.    | Amazonia.                                                       | Gould Coll.         |
| n. ♂ ad. sk.  | Yurimaguas, R. Huallaga ( <i>E.</i><br><i>Bartlett</i> ).       | Salvin-Godman Coll. |
| o. Juv. sk.   | Barra do Rio Negro, Oct.<br>( <i>J. Natterer</i> ).             | Salvin-Godman Coll. |

### 15. DEMIEGRETTA:

*Demiegretta, Blyth, J. A. S. Beng. xv. p. 372 (1846).* . . . . . Type  
D. sacra.

*Range.* Coasts of Eastern Asia, from the islands of the Bay of Bengal to Australia and north to Japan and Corea.

1. *Demiegretta sacra*.

Crabier de la Nouvelle Guinée, *Daubent. Pl. Enl.* viii. pl. 926.

Le Crabier noir, *Buff. Hist. Nat. Ois.* vii. p. 394 (1780).

New Guinea Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 71 (1785: New Guinea).

Blue Heron, var. B, *Lath. t. c.* p. 79 (Queen Charlotte's Sound, N. Z.).

Sacred Heron, *Lath. t. c.* p. 92 (Otaheite).

Sacred Heron, var. A, *Lath. t. c.* p. 93 (Otaheite).

*Ardea caerulea*, var.  $\gamma$ , *Gm. Syst. Nat.* i. p. 631 (1788).

*Ardea sacra*, *Gm. Syst. Nat.* i. p. 640 (1788: Otaheite); *Lath. Ind.*

*Orn.* ii. p. 696 (1790: Otaheite); *Vieill. N. Dict. d'Hist. Nat.*

xiv. p. 423 (1817); *Stephens in Shaw's Gen. Zool.* xi. p. 572

(1819); *Vieill. Enc. Méth.* iii. p. 1121 (1823); *Gray, Gen. B.* iii.

p. 556 (1847); *Hartl. Archiv fur Nat.* 1852, pp. 118, 134, 135

(Samoa; Paumotu; Fiji; Tonga); *id. J. f. O.* 1854, p. 169

(Tonga Isl.); *id. Ibis*, 1864, p. 232; *id. P. Z. S.* 1867, p. 831

(Matelotas); *Finsch & Hartl. Faun. Centralpolyn.* p. 201 (1867);

*id. P. Z. S.* 1868, pp. 8, 118 (Pelew Islands); *Scl. P. Z. S.* 1869,

p. 123 (Solomon Islands); *Dole, Proc. Bost. Soc. N. H.* xii. p. 303

(1869: Hawaiian Is.); *Hartl. & Finsch, J. f. O.* 1870, p. 136

(Tonga Isl.); *Finsch, t. c.* p. 346; *Potts, Trans. N. Z. Inst.* iii.

p. 97 (1870); *Buller, t. c.* p. 54; *Hutton, Cat. N. Zeal. B.*

p. 27 (1871); *Gray, Hand-l. B.* iii. p. 28, no. 10120 (1871);

*Hartl. & Finsch, P. Z. S.* 1871, p. 32 (Rarotonga Isl.); *Scl. Ibis*,

1871, p. 360; *Hartl. & Finsch, P. Z. S.* 1872, pp. 89, 104 (Pelew

and Mackenzie Is.); *Finsch, J. f. O.* 1872, pp. 33, 52 (Samoa),

p. 172 (New Zealand); *Buller, B. New Zeal.* p. 228, pl. 24. fig. 1

(1873); *Finsch, Trans. N. Zeal. Inst.* v. p. 208 (1873); *Morton,*

*t. c.* p. 226; *Hume, Nests & Eggs Ind. B.* p. 618 (1873: Anda-

mans and Nicobars); *Finsch, J. f. O.* 1874, p. 172; *id. Journ. Mus.*

*Godeffr.* viii. p. 32 (1875: Pelew Is.); *Layard, P. Z. S.* 1875,

p. 440 (Fiji Is.), 1876, p. 497 (Samoa), p. 503 (Friendly Is.);

*Sharpe, Voy. Ereb. & Terr., Birds*, App. p. 31 (1875); *Layard,*

*Ibis*, 1876, pp. 156, 393 (Fiji Is., breeding, Nov.); *Tristr. t. c.*

p. 265 (New Hebrides); *Cab. & Reichen. J. f. O.* 1876, p. 327

(New Guinea); *Brüggem. Abhandl. nat. Ver. Bremen*, v. p. 97

(1876: Celebes); *Ramsay, Proc. Linn. Soc. N. S. W.* i. p. 80 (1877);

*Scl. P. Z. S.* 1877, p. 112 (Duke of York Isl.), p. 555 (Admiralty

Is.); *Finsch, P. Z. S.* 1877, p. 726 (Tongatabu), p. 737 (Matuka,

July), p. 742 (Tahiti), p. 775 (Eua, Friendly Is., Aug.), p. 781

(Ponapé), p. 585 (Ninafou Isl., Oct.); *Sharpe, Journ. Linn. Soc.,*

*Zool.* xiii. p. 504 (1878: Port Moresby); *id. P. Z. S.* 1878, p. 271

(Ellice Isl.); *Finsch, P. Z. S.* 1879, p. 14 (Duke of York Isl.);

*Ramsay, Proc. Linn. Soc. N. S. W.* iii. p. 115 (1879: Hall Sound);

*Rosenb. Malay. Archip.* p. 278 (1878-79); *D'Alb. & Salvad.*

*Ann. Mus. Genov.* xiv. p. 131 (1879); *Sharpe, Journ. Linn.*

*Soc., Zool.* xiv. p. 688 (1879: Port Moresby); *Layard, Ibis*, 1879,

p. 221 (New Caledonia); *Finsch, P. Z. S.* 1880, p. 577 (Ruk

Isl., Carolines); *Finsch, Ibis*, 1880, p. 79 (Kahalui, Pacific),

pp. 220, 230, 232 (Marshall Isl.); *Layard, t. c.* p. 297 (Duke of

York Group); *Finsch, t. c.* pp. 432, 433 (Gilbert Is., Kingsmill

Group); *id. Ibis*, 1881, pp. 105, 106, 109 (Kushai), p. 115

(Ponapé), p. 246 (Pleasant Isl.); *Tristr. t. c.* p. 251 (Marquesas

Is.); *Finsch, t. c.* p. 540 (Matupi, New Britain); *Meyer, Verh.*

*z.-b. Ges. Wien*, xxxi. p. 767 (1881: Sumba); *Scl. Voy. 'Challenger,'*

ii. *Birds*, p. 31 (1881: Admiralty Is.); *Tristr. Ibis*, 1882, p. 144

- (Solomon Is.); *Ramsay, Proc. Linn. Soc. N. S. W.* vii. p. 42 (1883: San Christoval, Solomons); *Finsch, Vog. der Südsee*, p. 39 (1884); *Seebohm, Ibis*, 1884, p. 176 (Tau-shima); *id. Ibis*, 1887, p. 180 (Liu Kiu Is.); *Buller, B. New Zeal.* 2nd ed. ii. p. 129 (1888); *Triestr. Ibis*, 1892, p. 297 (Solomon Is.); *Wiglesw. Ibis*, 1893, pp. 211, 215 (Gilbert Is.).
- Ardea sacra*, var.  $\beta$ , *Gm. Syst. Nat.* i. p. 640 (1788).
- Ardea novæ guineæ*, *Gm. Syst. Nat.* i. p. 644 (1788); *Lath. Ind. Orn.* ii. p. 685 (1790); *Vieill. Enc. Méth.* iii. p. 1124 (1823); *Gray, Gen. B.* iii. p. 556 (1847); *Reichenb. Grall.* tab. lxxxix. fig. 472 (1846-48); *Gray, P. Z. S.* 1858, p. 197 (New Guinea); *id. Cat. Mamm. & B. New Guin.* pp. 51, 62 (1859); *id. P. Z. S.* 1861, p. 438 (New Guinea; Aru Is.); *id. Hand-l. B.* iii. p. 29, no. 10124 (1871).
- Ardea cærulea*, var.  $\beta$ , *Lath. Ind. Orn.* ii. p. 689 (1790: New Zealand).
- Ardea matook*, *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 416 (1817: Australia and Queen Charlotte's Sound); *Gray, Ibis*, 1862, p. 236 (Queen Charlotte's Sound, N. Z.); *Finsch, J. f. O.* 1867, p. 332 (N. Z.); *Hutton, Ibis*, 1870, p. 398 (Auckland).
- New Zealand Heron, *Lath. Gen. Hist. B.* ix. p. 128 (1824).
- Ardea nigerrima*, *Wagl. Syst. Av.*, *Ardea*, p. 182, sp. 22 (1827; ex *D'Aubent.*).
- Ardea jugularis*, *Forst. Icon. ined.* tab. 114; *Wagl. Syst. Av.*, *Ardea*, p. 181, sp. 18 (1827: New Zealand); *Less. Traité d'Orn.* p. 574 (1831); *Forst. Descr. Anim.* p. 172 (1844: S. Pacific Is.); *Gray, Gen. B.* iii. p. 556 (1847); *Hartl. Archiv für Nat.* 1852, p. 135; *id. J. f. O.* 1854, p. 167 (Marauhe Is.), p. 169 (Society Is.), p. 170 (Marquesas Is.); *id. J. f. O.* 1855, pp. 319, 421 (Nicobars); *Moll. & Dillw. Contr. Nat. Hist. Labuan*, p. 58 (1855); *Cass. U.S. Expl. Exped.* p. 296 (1858); *Gray, P. Z. S.* 1858, p. 197 (N. Australia); *id. Cat. Mamm. & B. New Guin.* p. 62 (1859); *id. P. Z. S.* 1861, p. 438 (New Guinea); *Cass. Proc. Philad. Acad.* 1862, p. 321 (Liu Kiu, Dec.); *Schl. Mus. Pays-Bas, Ardeæ*, p. 25 (1863); *Finsch, Neu-Guinea*, p. 183 (1865); *Pelz. Reise Novara, Vog.* p. 118 (1865: Nicobars; Puynipet; Tabiti); *Schl. Nederl. Tijdschr. Dierk.* iii. p. 348 (1866: Aru; Kei); *Hume, Str. F.* i. p. 87, note (1873); *Rosenb. Reist. naar Geelvinkb.* pp. 8, 118 (1875); *Reichen. J. f. O.* 1877, p. 261; *D'Alb. Ann. Mus. Genov.* x. p. 20 (1877); *Rosenb. Malay. Archip.* p. 324 (1878-79: Ceram), pp. 373, 407, 563 (Salawatti); *Salvad. Ann. Mus. Genov.* xiv. p. 667 (1879); *Sharpe, P. Z. S.* 1887, p. 516 (Christmas Isl., Indian Ocean); *Lister, P. Z. S.* 1888, p. 528 (Christmas Isl.); *Seebohm, B. Japan. Emp.* p. 220 (1890).
- Egretta nigerrima*, *Swains. Classif. B.* ii. p. 354 (1837).
- Herodias matook*, *Gray in Dieffenb. Trav. N. Zeal.* ii. App. p. 196 (1843); *id. Voy. Ereb. & Terr., Birds*, p. 13 (1846).
- Ardea æquinoctialis* (nec Linn.), *Forst. Descr. Anim.* p. 173 (1844).
- Ardea novæ-hollandiæ* (nec Lath.), *Forst. Descr. Anim.* p. 172, note (1844).
- Herodias greyi*, *Gray, List Grall. Brit. Mus.* p. 80 (1844: S. Australia); *Gould, B. Austr.* vi. pl. 61 (1848); *Reichenb. Grall.* tab. 160. fig. 2072 (1851); *Macgill. Narr. Voy. Rattlesn.* ii. p. 358 (1852); *Bp. Consp. Av.* ii. p. 122 (1855); *Scl. P. Z. S.* 1863, p. 223 (Banjarmassing); *Rosenb. Nat. Tijdschr. Nederl. Ind.* xxv. p. 253 (1863); *id. J. f. O.* 1864, p. 136 (N. Australia); *id. Reis naar Zuidoostereil.* p. 53 (1867).



- Herodias jugularis*, *Gray, List Grall. Brit. Mus.* p. 80 (1844: New Zealand); *Gould, B. Austr.* vi. pl. 60 (1848); *Blyth, Cat. B. Mus. As. Soc.* p. 280 (1849: Arakan; Nicobars); *Wall. P. Z. S.* 1863, p. 487 (Timor); *Scl. P. Z. S.* 1864, p. 9 (Huaheine, Society Is.).
- Demiegretta concolor*, *Blyth, J. A. S. Beng.* xv. p. 372 (1846: Arakan); *Ball, op. cit.* xxxix. pt. 2, p. 243 (1870: Port Blair).
- Ardea atra* (*nec Gm.*), *Cur. in Mus. Paris*; *Pucher. Rev. et Mag. de Zool.* 1851, p. 375 (Marianne Is.).
- Egretta jugularis*, *Licht. Nomencl. Av. Mus. Berol.* p. 89 (1854: Sumatra).
- Egretta greyi*, *Licht. t. c.* p. 89 (Tasmania).
- Herodias novæ-guinææ*, *Bp. Consp. Av.* ii. p. 121 (1855); *Scl. Journ. Linn. Soc.* ii. p. 169 (1858: New Guinea); *Rosenb. Nat. Tijdschr. Nederl. Ind.* xxv. p. 253 (1863); *id. J. f. O.* 1864, p. 136.
- Herodias atra*, *Bp. Consp. Av.* ii. p. 121 (1855).
- Herodias sacra*, *Bp. Consp. Av.* ii. p. 121 (1855); *id. C. R.* xl. p. 722 (1855); *Ramsay, Proc. Linn. Soc. N. S. W.* i. p. 192 (1877); *Layard, Ibis*, 1880, p. 232 (Loyalty Is.).
- Herodias concolor*, *Bp. Consp. Av.* ii. p. 121 (1855: Nicobars); *id. C. R.* xl. p. 722 (1855); *Blyth, Ibis*, 1868, p. 133 (Andamans); *Ball, J. A. S. Beng.* xli. pt. 2, p. 289 (1872: Andamans); *id. Str. F.* i. p. 87 (1873); *Blyth, B. Burm.* p. 160 (1875: Arakan).
- Ardea garzetta* (*nec Linn.*), *Motl. & Dillw. Contr. Nat. Hist. Labuan*, p. 35 (1855).
- Ardea greyi*, *Gray, P. Z. S.* 1858, p. 197 (Louisiade Archip.); *id. Cat. Mamm. & B. New Guin.* p. 62 (1859); *id. P. Z. S.* 1861, p. 438.
- Ardea* (*Herodias*) *albolineata*, *Gray, P. Z. S.* 1859, p. 166 (Isle of Pines); *id. Cat. B. Trop. Is. Pacific Ocean*, p. 48 (1859; Isle of Pines; Fiji Is.).
- Ardea* (*Herodias*) *sacra*, *Gray, Cat. B. Trop. Is. Pacific Ocean*, p. 48 (1859).
- Ardea* (*Herodias*) *atra*, *Gray, t. c.* p. 48.
- Herodias eulophotes*, *Swinh. Ibis*, 1860, pp. 64, 429; *David & Oust. Ois. Chine*, p. 441 (1877).
- Ardea cinerea* (*nec Linn.*), *Ellman, Zool.* 1861, p. 7469 (New Zealand).
- Ardea albolineata*, *Schl. Mus. Pays-Bas, Ardeæ*, p. 27 (1863: Japan; Halmahera; Ternate); *Finsch, Neu-Guin.* p. 183 (1865); *Gray, Hand-l. B.* iii. p. 28, no. 10121 (1871); *Rosenb. Reist. naar Geelvinkb.* p. 8 (1875); *id. Malay. Archip.* p. 407 (1878-79).
- Ardea eulophotes*, *Schl. Mus. Pays-Bas, Ardeæ*, p. 29 (1863).
- Ardea concolor*, *Pelz. Reise Novara, Vög.* p. 122 (1865: Nicobars).
- Demiegretta jugularis*, *Gould, Handb. B. Austr.* ii. p. 307 (1865); *Masters, Proc. Linn. Soc. N. S. W.* i. p. 61 (1877: Fitzroy Isl.); *Ramsay, P. Z. S.* 1877, p. 342 (Northern Queensland); *Walker, Ibis*, 1892, p. 257 (Adèle Isl., N.W. Australia).
- Herodias asha* (*nec Sykes*), *Gould, Handb. B. Austr.* ii. p. 305 (1865: Port Stephens, N. S. W.).
- Demiegretta greyi*, *Gould, Handb. B. Austr.* ii. p. 309 (1865); *Hume, Str. F.* i. p. 307 (1873: Ross Isl.); *Masters, Proc. Linn. Soc. N. S. W.* i. p. 61 (1877: Low Isl., Trinity Bay); *Walker, Ibis*, 1892, p. 257 (Adèle Isl., N.W. Australia).
- Herodias andamanensis*, *Beavan, Ibis*, 1867, p. 333 (Andaman Is.).
- Garzetta eulophotes*, *Swinh. P. Z. S.* 1871, p. 412.

*Demiegretta sacra*, *Wald. Ibis*, 1873, p. 318 (Andaman Is.); *Hume, Str. F.* ii. p. 304 (1874: Andamans and Nicobars), *Salvad. Ucc. Born.* p. 346 (1874); *Hume, Str. F.* iii. p. 323 (1875: Mergui); *Tweedd. P. Z. S.* 1877, pp. 530, 551 (Cebu); *id. Ibis*, 1877, p. 323 (S.E. Sumatra); *Hume & Davison, Str. F.* vi. p. 481 (1878: Coast of Tenasserim); *Hume, op. cit.* viii. p. 114 (1879), p. 158 (Kossoum); *Tiraut, Bull. Comité Agricole Cochinchine*, (3) i. p. 151 (1879); *Tweedd. Voy. 'Challenger,' in Birds*, p. 24 (1881: Cebu); *Nichols Ibis*, 1882, p. 70 (Cocos Is., Java); *Salvad. Orn. Papuasia etc.* iii. p. 345 (1882); *Sci. P. Z. S.* 1883, p. 52 (Timor Laut), pp. 195, 200 (Kirimoen); *Oates, Handb. B. Brit. Burm.* ii. p. 250 (1883); *H. O. Forbes, P. Z. S.* 1884, p. 434; *Pleske, Bull. Acad. Petersb.* xxix. p. 537 (1884: Ternate); *Nehrke J. f. O.* 1884, p. 35 (Waigiu); *Meyer, Sitzb. u. Abh. Gesellsch. Isis*, 1884, Abh. i. p. 56 (Siao, Ceram); *Vorderm. N. T. Nederl. Ind.* xlv. p. 202 (1884: Java); *Guillem. P. Z. S.* 1885, p. 274 (Sulu Is.), p. 420 (Cagagan, Sulu), p. 581 (Kema; Maim Bay, N. Celebes), p. 665 (Samatee, Salawatti); *Ramsay, Tab. List Austr. B.* p. 21 (1888: Port Darwin; Port Essington; Gulf of Carpentaria; Cape York; Rockingham Bay; Port Denison; Wide Bay distr.); *North, Proc. Linn. Soc. N. S. W.* (2) ii. p. 445 (1888: Ovalau, Fiji, Sept., breeding); *Ogilvie Grant, P. Z. S.* 1888, p. 333 (Fauro, Solomon Is.), 1889, p. 187 (So-o, Solomons), p. 202 (Rubiana); *North, Nests & Eggs Austr. B.* p. 319 (1889: Island off Tasmania); *Everett, Journ. Straits Branch As. Soc.* 1889, p. 189; *Vorderm. N. T. Nederl. Ind.* xlix. p. 417 (1889: Sumatra); *Sharpe, Ibis*, 1890, pp. 146, 285 (Abai, Dec.); *Oates, ed. Hume's Nests & Eggs Ind. B.* iii. p. 246 (1890: Andamans and Nicobars); *Wiglesw. Abhandl. k. zool. Mus. Dresd.* 1890-91, no. 6, pp. vii-x, 67; *Salvad. Agg. Orn. Papuasia etc.* iii. p. 205 (1891); *Sharpe, Ibis*, 1894, pp. 245, 258 (Bongao; Sulu Archip.); *Salvad. Ann. Mus. Genov.* (2) xiv. p. 601 (1894: Mentawai).

*Demiegretta candida*, *Tytler, MSS.*; *Hume, Str. F.* ii. p. 307 (1874: Andaman Is.).

*Demiegretta brayi* (error), *Ramsay, Proc. Linn. Soc. N. S. W.* i. p. 375 (1877: Duke of York Is.).

*Ardea jugularis*, var. *concolor*, *Reichen. J. f. O.* 1877, p. 262.

*Ardea jugularis*, var. *novæ-guinæe*, *Reichen. J. f. O.* 1877, p. 262.

*Ardea jugularis*, var. *greyi*, *Reichen. J. f. O.* 1877, p. 262.

*Ardea jugularis*, var. *sacra*, *Reichen. J. f. O.* 1877, p. 262.

*Demiegretta ringeri*, *Stejn. Proc. U.S. Nat. Mus.* x. p. 300 (1887: Liu Kiu, Dec.).

*Demiegretta asha* (nec *Sykes*), *Ramsay, Tab. List Austr. B.* p. 21 (1888: Wide Bay distr.; Richmond and Clarence Rivers; N. S. W.).

*Demiegretta nigra*, *Whitehead, Ibis*, 1890, p. 60 (Palawan).

*Ardea jugularis greyi*, *Seebohm, B. Japan. Emp.* p. 221 (1890).

*Adult male in breeding-plumage.* General colour above and below deep blackish slate-colour; the feathers of the head almost black; the feathers of the upper breast elongated like those of the middle of the back, some of the latter decomposed; the elongated feathers of a paler slaty grey, and those of the back reaching to the end of the tail; head crested and of the same colour as the back; abdomen and vent-feathers tinged with ashy; a pure white streak down the centre of the throat. Total length 23 inches, culmen 2.8, wing 10, tail 3.10, tarsus 2.9.

*Adult female in breeding-plumage.* Similar to the male, but the ornamental plumes slightly less developed. Total length 21 inches, wing 10·2.

*Young.* Paler and more sooty brown than the adults, and bleaching often to a light earthy brown. No ornamental plumes on the head, back, and chest.

Adult birds, either in winter plumage or perhaps in the second year, are blacker than in the summer plumage. Some of these black-plumaged birds have ornamental feathers, which looks as if they were fully adult, and therefore they may be birds of the second year, as it is quite evident that the greyer-plumaged ones are very old and perfect in livery.

The white streak down the throat is often absent or reduced to a few spots. It appears to be absent equally in quite young birds and in old ones also, and it may be the result of inherent melanism in the species.

The white form is exactly similar in size to the grey form, and, when adult, has the same ornamental plumes. In the Pacific islands the two forms appear to interbreed, and produce white young ones mottled or streaked with slaty grey. I have been unable to recognize any of the many forms into which the Reef-Heron has been subdivided by naturalists. Some birds are larger, as will be seen by the measurements of the tarsi given in detail below, and these larger birds have a slightly longer wing and a heavier bill, but no specific distinctions can be founded on these variations, which are very slight.

“The colour of the soft parts is excessively variable. In the adult the bare portion of the tibia varies from dark grass-green to greenish plumbeous; the back and sides of the tarsus and the greater part of the toes are generally pea-green, sometimes duller, sometimes yellower; the front of the tarsus and the first joint of the mid toe black, but sometimes these parts are green, only patched or mottled with black, and sometimes the black extends along the ridges of all the toes; the colour of the bill and bare skin in front of the eye varies from sienna-brown to chocolate; sometimes the bill is a sort of light mahogany colour, and the bare skin a sort of greenish brown; usually the bills are yellowish at the tips; the lower mandible is generally lighter, sometimes brownish horny, sometimes yellowish horny; and in the breeding-plumage the whole lower mandible becomes apparently a very decided, though dull, yellow; the irides vary from bright to deep yellow. I suspect, though we have not been able to work it out, that these differences in colour are due both to age and to season.” (*A. O. Hume.*)

It is with great hesitation that I have added the name of *Demiegretta eulophotes* to the long list of synonyms of *D. sacra*. Mr. Rickett has presented an adult specimen of *D. eulophotes* to the Museum, and another one has been lent to me by the Rev. H. H. Slater. Both birds appear to me to be Reef-Herons, and have fully developed ornamental plumes. The yellow bill would seem, at first sight, to constitute a specific character, but several other specimens of undoubted *D. sacra* in the Museum have

yellow bills, more or less verging into black, and both Mr. Everett's white Reef-Heron from Labuan and the bird collected by Mr. Lister on Christmas Island are undoubtedly the same as *D. eulophotes*. The absence of grey Reef-Herons in those parts of the Chinese coast where *D. eulophotes* has hitherto been found argues in favour of the latter bird being a distinct species, and none of the other white Reef-Herons in the Museum collection have such a development of ornamental plumes as is shown by the two Chinese examples alluded to above. On the other hand, these may belong to an outlying colony of *D. sacra*, the members of which are all white. The question of the specific distinctness of *D. eulophotes* can only be solved by naturalists residing in China, who must obtain a series of specimens at all seasons of the year.

*Hab.* Coasts of Burma and the islands in the Bay of Bengal, by the Malay Peninsula and islands to Australia and the Pacific, extending north to the islands in the Bay of Corea.

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|--------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------|
| a. ♀ ad. sk.                                                 | Oyster Island, British Burma.                                                    | Oates Coll.             |
| [t. 2.45].                                                   |                                                                                  |                         |
| b. Juv. sk. [t. 2.7].                                        | British Burma.                                                                   | Oates Coll.             |
| c. ♂ ad. sk.                                                 | Pagoda Rocks, Kyouk Phyou, April 18 ( <i>J. Armstrong</i> ).                     | Hume Coll.              |
| [t. 2.95].                                                   |                                                                                  |                         |
| d. ♀ ad. alb. sk.                                            | Amherst, Jan. 14 ( <i>W. Davison</i> ).                                          | Hume Coll.              |
| [t. 3.1].                                                    |                                                                                  |                         |
| e. ♂ ad. sk.                                                 | Mergui, Nov. 15 ( <i>W. Davison</i> ).                                           | Hume Coll.              |
| [t. 2.9].                                                    |                                                                                  |                         |
| f, g. ♀ imm.                                                 | Little Coco Island, March 29 ( <i>W. Davison</i> ).                              | Hume Coll.              |
| [t. 2.7-2.9]; h. ♂ ad. [t. 2.8] sk.                          |                                                                                  |                         |
| i. ♀ imm. sk.                                                | Great Coco Island, March 24 ( <i>W. Davison</i> ).                               | Hume Coll.              |
| [t. 2.95].                                                   |                                                                                  |                         |
| k-w. ♂ ♀ ad. et juv. sk. [t. 2.35-2.95].                     | South Andamans, Sept., Dec. to May ( <i>R. G. W. R. &amp; R. J. Wimberley</i> ). | Tweeddale & Hume Colls. |
| x-b'. Ad. sk.                                                | Port Blair, Aug., March ( <i>R. G. W. R. &amp; R. J. Wimberley</i> ).            | Tweeddale & Hume Colls. |
| [t. 2.4-2.85].                                               |                                                                                  |                         |
| c', d'. Juv. sk.                                             | Ross Island, Dec. 20 ( <i>R. G. W. R.</i> ).                                     | Tweeddale Coll.         |
| [t. 2.9].                                                    |                                                                                  |                         |
| e'. ♂ imm. sk.                                               | Phoenix Bay, Dec. 20 ( <i>W. Davison</i> ).                                      | Hume Coll.              |
| [t. 2.5].                                                    |                                                                                  |                         |
| f'. ♂ ad. sk.                                                | Haddo, Andamans, Jan. 4 ( <i>W. Davison</i> ).                                   | Hume Coll.              |
| [t. 2.8].                                                    |                                                                                  |                         |
| g', h'. ♂ ♀ ad. sk.                                          | South Button Isl., March 21 ( <i>A. O. H.</i> ).                                 | Hume Coll.              |
| [t. 2.7-2.75].                                               |                                                                                  |                         |
| i'. ♀ alb. sk.                                               | Chatham, Andamans ( <i>A. de Roepstorff</i> ).                                   | Hume Coll.              |
| [t. 2.6].                                                    |                                                                                  |                         |
| k', l'. ♂ ad. [t. 2.75-8.5]; m', n'. ♀ ad. [t. 2.6-2.65] sk. | Camorta Isl., Nicobars, Feb. ( <i>W. Davison</i> ).                              | Hume Coll.              |
|                                                              |                                                                                  |                         |
| o', p'. Ad. et juv. st. [t. 2.7-2.75].                       | Camorta, Feb. 11 ( <i>R. J. Wimberley</i> ).                                     | Tweeddale Coll.         |
|                                                              |                                                                                  |                         |
| q', r'. ♂ ♀ ad. sk.                                          | Great Nicobar, Jan., March ( <i>W. Davison</i> ).                                | Hume Coll.              |
| [t. 2.8-2.9].                                                |                                                                                  |                         |
| s'-w'. ♂ ad. [t. 2.9] ♀ ad. et juv. alb. [t. 2.75] sk.       | Trinkut Isl., Jan., March ( <i>W. Davison</i> ).                                 | Hume Coll.              |

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|-------------------------------------------------------------------------|----------------------------------------------------------|---------------------------|
| <i>r'</i> . Ad. sk. [t. 2·9].                                           | Trinkut Isl., Jan. ( <i>R. J. Wimberley</i> ).           | Tweeddale Coll.           |
| <i>y'</i> , <i>z'</i> . ♂ ad. sk. [t. 2·8].                             | Pulo Melu, Jan. 29 ( <i>W. Davison</i> ).                | Hume Coll.                |
| <i>a''</i> , <i>b''</i> . ♂ juv., ♀ ad. sk. [t. 2·5–2·65].              | Preparis Isl., March 25 ( <i>W. D.</i> ).                | Hume Coll.                |
| <i>c''</i> . ♀ juv. sk. [t. 2·6].                                       | Teressa Isl., Jan. 18 ( <i>W. D.</i> ).                  | Hume Coll.                |
| <i>d''</i> . ♂ ad. sk. [t. 2·85].                                       | Katchull Isl., Feb. 19 ( <i>W. D.</i> ).                 | Hume Coll.                |
| <i>e''</i> . ♀ ad. sk. [t. 2·7].                                        | Katchull, Feb. 1 ( <i>R. J. Wimberley</i> ).             | Tweeddale Coll.           |
| <i>f''</i> . ♂ ad. sk. [t. 2·7].                                        | Nancowry Isl., Feb. 12 ( <i>R. J. W.</i> ).              | Tweeddale Coll.           |
| <i>g''</i> , <i>h''</i> . ♂ ad. sk. [t. 2·75–2·9].                      | Nancowry Isl., Dec., Feb. ( <i>W. D.</i> ).              | Hume Coll.                |
| <i>i''</i> . ♀ ad. sk. [t. 2·7].                                        | Bompoka Isl., March ( <i>W. D.</i> ).                    | Hume Coll.                |
| <i>k''</i> . Imm. sk. [t. 2·95].                                        | Siam.                                                    | M. Mouhot [C.].           |
| <i>l'</i> . Ad. sk. [t. 2·95].                                          | Kossoum, Malay Peninsula, June 15 ( <i>J. Darling</i> ). | Hume Coll.                |
| <i>m''</i> . Imm. alb. sk.                                              | Tonkah, Jan. 24 ( <i>J. Darling</i> ).                   | Hume Coll.                |
| <i>n''</i> , <i>o''</i> . ♂ ad.; <i>p''</i> . ♀ ad. sk. [t. 2·8–3·0].   | Jerome, Salangore, Aug. ( <i>W. Davison</i> ).           | Hume Coll.                |
| <i>q''</i> , <i>r''</i> . Imm. sk. [t. 3·0].                            | Malacca ( <i>Dr. Maingay</i> ).                          | Tweeddale Coll.           |
| <i>s''</i> . Ad. sk. [t. 2·8].                                          | Sumatra ( <i>Raffles</i> ).                              | India Museum.             |
| <i>t''–v''</i> . Ad. sk. [t. 2·8–2·9].                                  | Billiton.                                                | Tweeddale Coll.           |
| <i>w'</i> . ♀ ad. alb. sk. [t. 2·65].                                   | Christmas Island, Indian Ocean.                          | Capt. Maclear [P.].       |
| <i>x'</i> . Ad. sk. [t. 3·15].                                          | Labuan.                                                  | Governor Ussher [C.].     |
| <i>y''</i> . Ad. alb. sk. [t. 3·0].                                     | Labuan, March.                                           | A. H. Everett, Esq. [C.]. |
| <i>z'</i> . ♂ ad. sk. [t. 3·05].                                        | Cebu, Philippine Islands.                                | Voy. H.M.S. 'Challenger.' |
| <i>a<sup>3</sup></i> , <i>b<sup>3</sup></i> . ♂ ♀ ad. sk. [t. 2·9–3·0]. | Bongao Isl., Sulu Archip., July.                         | A. H. Everett, Esq. [C.]. |
| <i>c<sup>3</sup></i> . ♂ ad. alb. sk. [t. 3·4].                         | Foochow, May 4.                                          | C. B. Rickett, Esq. [P.]. |
| <i>d<sup>3</sup></i> . Ad. sk. [t. 2·9].                                | Liu Kiu Islands ( <i>H. Pryer</i> ).                     | Seebohm Coll.             |
| <i>e<sup>3</sup>–g<sup>3</sup></i> . Ad. sk. [t. 2·9–3·2].              | Tsu-shima ( <i>F. Ringer &amp; A. Holst</i> ).           | Seebohm Coll.             |
| <i>h<sup>3</sup></i> . ♀ imm. sk. [t. 2·7].                             | Negrie-lama, Celebes, Sept. 24 ( <i>Rosenberg</i> ).     | Salvin-Godman Coll.       |
| <i>i<sup>3</sup></i> . ♂ imm. sk. [t. 2·85].                            | Poe, Celebes, Oct. 9 ( <i>Rosenberg</i> ).               | Salvin-Godman Coll.       |
| <i>k<sup>3</sup></i> , <i>p<sup>3</sup></i> . Imm. sk. [t. 2·7–2·75].   | Celebes.                                                 | Tweeddale Coll.           |
| <i>m<sup>3</sup></i> . Ad. sk. [t. 3·3].                                | Sanghir Islands ( <i>A. B. Meyer</i> ).                  | Tweeddale Coll.           |
| <i>n<sup>3</sup></i> . Ad. alb. sk. [t. 3·0].                           | Morotai Island.                                          | Wallace Coll.             |

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|--------------------------------------------------------------|----------------------------------------|--------------------------|
| <i>o</i> <sup>h</sup> . ♀ ad. sk.                            | East Timor.                            | Wallace Coll.            |
| [t. 2·8].                                                    |                                        |                          |
| <i>p</i> <sup>h</sup> . ♂ ad. sk.                            | Larat, Tenimber Islands,               | Dr. H. O. Forbes         |
| [t. 2·8].                                                    | Aug. 10.                               | [O.]                     |
| <i>q</i> <sup>h</sup> . Ad. alb. sk.                         | Louisiade Islands.                     | Capt. Owen Stanley       |
| [t. 2·8].                                                    |                                        | [P.]                     |
| <i>r</i> <sup>h</sup> . ♂ ad. sk.                            | Admiralty Islands.                     | Voy. H.M.S. 'Chal-       |
| [t. 3·05].                                                   |                                        | lenger.'                 |
| <i>s</i> <sup>h</sup> . Ad. alb. sk.                         | Port Moresby.                          | O. C. Stone, Esq.        |
| [t. 3·0].                                                    |                                        | [P.]                     |
| <i>t</i> <sup>h</sup> . ♂ juv. sk.                           | Thursday Island, Torres Straits        | Voy. H.M.S. 'Alert.'     |
| [t. 2·7].                                                    | ( <i>Dr. Coppinger</i> ).              |                          |
| <i>u</i> <sup>h</sup> . Ad. alb. st.                         | Hope Island, Torres Straits.           | Capt. Stanley [P.]       |
| <i>v</i> <sup>h</sup> , <i>w</i> <sup>h</sup> . Ad. alb. st. | Australia.                             | J. B. Jukes, Esq.        |
|                                                              |                                        | [P.]                     |
| <i>x</i> <sup>h</sup> . Imm. sk.                             | Australia.                             | Imperial Institute       |
| [t. 2·8].                                                    |                                        | [P.]                     |
| <i>y</i> <sup>h</sup> . Ad. sk. [t. 2·9].                    | Port Jackson.                          | Australian Mus. [P.]     |
| <i>s</i> <sup>h</sup> . Ad. alb. sk.                         | Queensland ( <i>J. T. Cockerell</i> ). | Salvin-Godman Coll.      |
| [t. 2·55].                                                   |                                        |                          |
| <i>a</i> <sup>h</sup> - <i>c</i> <sup>h</sup> . Juv. sk.     | Queensland ( <i>J. T. Cockerell</i> ). | Salvin-Godman Coll.      |
| [t. 2·7 2·75].                                               |                                        |                          |
| <i>a</i> <sup>h</sup> - <i>m</i> <sup>h</sup> . Ad. sk.      | Queensland ( <i>J. T. Cockerell</i> ). | Salvin-Godman Coll.      |
| [t. 2·6-2·9].                                                |                                        |                          |
| <i>n</i> <sup>h</sup> . Imm. sk.                             | Storage Bay near Port Denison          | Salvin-Godman Coll.      |
| [t. 2·3].                                                    | ( <i>J. T. Cockerell</i> ).            |                          |
| <i>o</i> <sup>h</sup> . Imm. sk.                             | Moreton Island, Oct. 19                | Voy. H.M.S. 'Rattle-     |
| [t. 2·95].                                                   | ( <i>J. Macgillivray</i> ).            | snake.'                  |
| <i>p</i> <sup>h</sup> , <i>q</i> <sup>h</sup> . Ad. st.      | Pt. Essington.                         | Capt. Chambers [P.]      |
| <i>r</i> <sup>h</sup> . Ad. alb. sk.                         | Pt. Essington.                         | Capt. Chambers [P.]      |
| [t. 2·75].                                                   |                                        |                          |
| <i>s</i> <sup>h</sup> . Ad. st.                              | New South Wales.                       | Australian Museum        |
|                                                              |                                        | [P.]                     |
| <i>t</i> <sup>h</sup> - <i>v</i> <sup>h</sup> . Ad. sk.      | New Zealand.                           | Colonial Museum,         |
| [t. 3·0-3·1].                                                |                                        | Wellington [E.]          |
| <i>w</i> <sup>h</sup> , <i>x</i> <sup>h</sup> . Ad. et juv.  | New Britain ( <i>J. Brazier</i> ).     | P. L. Sclater, Esq.      |
| sk. [t. 2·65-2·9].                                           |                                        | [P.]                     |
| <i>y</i> <sup>h</sup> . Ad. [t. 2·9];                        | Duke of York Island ( <i>G.</i>        | Tweeddale Coll.          |
| <i>z</i> <sup>h</sup> . Ad. alb.                             | <i>Brown</i> ).                        |                          |
| [t. 2·8].                                                    |                                        |                          |
| <i>a</i> <sup>h</sup> . ♂ ad. sk.                            | Island of Rubiana, Solomon             | C. M. Woodford,          |
| [t. 2·25].                                                   | Group, Aug. 10.                        | Esq. [C.]                |
| <i>b</i> <sup>h</sup> . Imm. sk.                             | Isle of Pines, New Caledonia           | Voy. H.M.S. 'Rattle-     |
| [t. 3·45].                                                   | ( <i>J. Macgillivray</i> ).            | snake.' (Type of         |
|                                                              |                                        | <i>D. albolineata</i> .) |
| <i>c</i> <sup>h</sup> . Ad. alb. st.                         | Isle of Pines, New Caledonia           | Voy. H.M.S. 'Rattle-     |
| [t. 3·85].                                                   | ( <i>J. M.</i> ).                      | snake.'                  |
| <i>d</i> <sup>h</sup> . ♂ ad. alb. st.                       | New Caledonia.                         | Purchased.               |
| <i>e</i> <sup>h</sup> . Ad. sk. [t. 2·8-                     | Fiji Islands.                          | Sir A. B. Gordon         |
| 3·25].                                                       |                                        | [P.]                     |
| <i>f</i> <sup>h</sup> . ♂ juv. sk.                           | Fiji Islands, Nov. 3 ( <i>E. L.</i>    | Seebohm Coll.            |
| [t. 3·3].                                                    | <i>Layard</i> ).                       |                          |
| <i>g</i> <sup>h</sup> , <i>h</i> <sup>h</sup> . ♀ alb. sk.   | Suva, Fiji, Feb., March                | Seebohm Coll.            |
| [t. 2·8-3·2].                                                | ( <i>E. L. Layard</i> ).               |                          |
| <i>i</i> <sup>h</sup> . ♂ ad. sk.                            | Isl. of Matuka, Fiji, Aug.             | Voy. H.M.S. 'Herald.'    |
| [t. 3·4].                                                    | ( <i>F. M. Rayner</i> ).               |                          |
| <i>k</i> <sup>h</sup> . ♀ ad. sk.                            | Matuka, July 24.                       | Voy. H.M.S. 'Chal-       |
| [t. 3·0].                                                    |                                        | lenger.'                 |

|                                                                                  |                                          |                           |
|----------------------------------------------------------------------------------|------------------------------------------|---------------------------|
| <i>l</i> <sup>s</sup> . Alb. sk.                                                 | Mbau Isl., Fiji, Aug.                    | Brenchley Coll.           |
| [t. 3·15].                                                                       |                                          |                           |
| <i>m</i> <sup>s</sup> , <i>n</i> <sup>s</sup> . Ad. alb. sk.                     | Ellice Islands.                          | Rev. S. J. Whitmee [C.].  |
| [t. 2·7-2·8].                                                                    |                                          |                           |
| <i>o</i> <sup>s</sup> . Ad. sk. [t. 3·1].                                        | Samoa Islands.                           | Rev. J. B. Stair [C.].    |
|                                                                                  |                                          | Gould Coll.               |
| <i>p</i> <sup>s</sup> , <i>q</i> <sup>s</sup> . Ad. sk.                          | Samoa Islands.                           |                           |
| [t. 2·8].                                                                        |                                          |                           |
| <i>r</i> <sup>s</sup> , <i>s</i> <sup>s</sup> . Ad. et juv. sk.                  | Samoa Islands.                           | Rev. S. J. Whitmee [C.].  |
| [t. 2·7-2·75].                                                                   |                                          |                           |
| <i>t</i> <sup>s</sup> , <i>u</i> <sup>s</sup> . ♀ imm. sk.                       | Tahiti.                                  | Voy. H.M.S. 'Challenger.' |
| [t. 2·8-2·9].                                                                    |                                          |                           |
| <i>v</i> <sup>s</sup> . Ad. sk.                                                  | Huaheine.                                | Gould Coll.               |
| [t. 3·0].                                                                        |                                          |                           |
| <i>w</i> <sup>s</sup> , <i>x</i> <sup>s</sup> . Alb. sk.                         | Borabora Island.                         | Hume Coll.                |
| [t. 2·75-2·85].                                                                  |                                          |                           |
| <i>y</i> <sup>s</sup> . Ad. sk.                                                  | Vavao, Friendly Islands.                 | Purchased.                |
| <i>z</i> <sup>s</sup> . Ad. et juv. sk.                                          | Saltwater Lagoon, Tongatabu, July.       | Brenchley Coll.           |
| <i>a</i> <sup>s</sup> , <i>b</i> <sup>s</sup> . ♂ ♀ alb. sk.                     | Tongatabu.                               | Voy. H.M.S. 'Challenger.' |
| <i>c</i> <sup>s</sup> . ♂ alb. sk.                                               | Tongatabu, Nov. ( <i>Dr. Copinger</i> ). | Voy. H.M.S. 'Alert.'      |
| <i>d</i> <sup>s</sup> . Skeleton.                                                | Aneiteum.                                | J. Macgillivray [C.].     |
| <i>e</i> <sup>s</sup> , <i>f</i> <sup>s</sup> . Sterna of <i>D. eulophotes</i> . |                                          | Consul Swinhoe [P.].      |

## 16. NYCTICORAX.

|                                                                         |                |
|-------------------------------------------------------------------------|----------------|
| Nycticorax, <i>Rafin. Analyse</i> , p. 71 (1815) .....                  | Type.          |
| Nyctiardea, <i>Swinns. Classif. B.</i> ii. p. 354 (1837) ....           | N. nycticorax. |
| Scotæus, <i>Keys. &amp; Blas. Wirb. Eur.</i> pp. lxxx, 220 (1840) ..... | N. nycticorax. |
| Nycterodius, <i>Macgill. Man. Brit. Orn.</i> ii. p. 126 (1842) .....    | N. nycticorax. |

*Range.* Nearly cosmopolitan, but not ranging very far north.

*Key to the Species.*

- a.* Tail grey or slaty brown, not chestnut like the back.
- a'*. No chestnut on neck; no white patch on the back.
- a''*. Base of forehead and eyebrow white; under tail-coverts white.
- a<sup>s</sup>*. Under surface of body white, including the under wing-coverts and axillaries, with a delicate grey shade on the sides of the neck and chest. . . . . *nycticorax*, p. 146.
- b<sup>s</sup>*. Almost entirely delicate grey underneath, including under wing-coverts and axillaries; throat and abdomen white . . . . . *layazu-guira*, p. 155.
- b''*. No white band on forehead; under surface of body entirely dark slaty grey or slaty brown, as also the sides of neck and under tail-coverts; upper throat only white . . . . . *cianocephalus*, p. 156.



- b'. Neck bright chestnut; crown black, throat white; with a large white patch on the back ..... *leuconotus*, p. 157.  
 b. Tail chestnut like the general tone of the upper surface.  
 c'. Back vinous rufous; the wings uniform with the back or a little darker; lower surface of wings more or less vinous.  
 c''. Ornamental breeding-plumes on nape white.  
 c'. Eyebrow white; thighs white, only faintly tinged with rufous ..... } *caledonicus*, p. 158.  
 d'. No white eyebrow, only a faint supraloral streak; lower throat and chest chestnut; chin and upper throat white; thighs strongly tinged with chestnut ..... } *crassirostris*, p. 161.  
 d''. Ornamental breeding-plumes on nape black; sides of face deep chestnut, as also the sides of the neck; throat and centre of fore-neck lighter; no trace of an eyebrow ..... } *mandibularis*, p. 161.  
 d'. Back blackish slate-colour like the head; lower surface of wings more or less grey. *manillensis*, p. 162.  
 d'. Back blackish slate-colour like the head; lower surface of wings more or less grey. *minahassæ*, p. 163.

### 1. *Nycticorax nycticorax*.

The Night Heron.

The Night Raven, *Albin. Nat. Hist. B.* ii. p. 62, pl. 67 (1738).

Le Héron gris, *Brisson Orn.* v. p. 412, pl. xxxvi. fig. 1 (1760).

Le Héron hupé du Mexique, *Brisson Orn.* v. p. 418 (1760).

Le Bihoreau, *Brisson Orn.* v. p. 493, pl. xxxix. (1760); *D'Aubert. Pl. Enl.* viii. pls. 758, 759; *Buff. Hist. Nat. Ois.* vii. p. 435, pl. xxii. (1780).

*Ardea nycticorax*, *Linn. Syst. Nat.* i. p. 235 (1766); *Gm. Syst. Nat.* i. p. 624 (1788); *Wilson, Amer. Orn.* vii. p. 101, pl. lxi. figs. 2, 3 (1813); *Horsf. Trans. Linn. Soc.* xiii. p. 189 (1820: Java); *Temm. Man. d'Orn.* ii. p. 577 (1820); *Roux, Orn. Proc.* pl. 318 (1825: juv.); *Pallas, Zoogr. Rosso-Asiat.* ii. p. 126 (1826); *Audub. B. Amer.* pl. ccxxxvi. (c. 1826); *Werner, Atlas, Coureurs*, pl. 27 (1827); *Ménétr. Cat. Rais. Cauc.* p. 50 (1832: Lenkoran); *Audub. Orn. Biogr.* iii. p. 275 (1835), v. p. 600 (1839); *Naum. Vög. Deutschl.* ix. p. 139, pl. 225 (1838); *Keys. u. Blas. Wirb. Eur.* pp. lxxx, 220 (1840); *Nordm. in Démid. Voy. Russ. Mérid.* iii. p. 262 (1840); *Audub. B. Amer.* 8vo, vi. p. 82, pl. cccxiii. (1843); *Schl. Rev. Crit.* p. xcvi (1844); *Mühle, Beitr. Orn. Griechentl.* p. 116 (1844); *Heicits. Eggs Brit. B.* ii. p. 272, pl. lxxiv. fig. 3 (1846); *Kjærh. Orn. Dan.* pl. xxxii. fig. 4 (1852); *Schl. Vog. Nederl.* pls. 193, 194 (1854); *Linderm. Vög. Griechentl.* p. 153 (1860); *Schl. Dier. Nederl., Vogels*, pl. 19. figs. 8, 9 (1861); *id. Mus. Pays-Bas, Ardeæ*, p. 56 (1863: Europe and America); *Wright, Ibis*, 1864, p. 144 (Malta, spring and autumn); *Schl. & Poll. Faune Madag., Ois.* p. 126 (1868); *Borggr. Vogelf. Norddeutschl.* p. 123 (1869); *Sunder. (Eyr. K. Vet.-Akad. Förh.* 1869, p. 602 (Porto Rico); *id. Svensk. Fogl.* pl. lxxv. figs. 4, 5 (1856-72); *Finsch & Hartl. Vög. Ostaf.* p. 700 (1870); *Elwes & Buckley, Ibis*, 1870, p. 334 (Bulgaria); *Heugl. Orn. N.O.-Afr.* ii. pt. i. p. 1086 (1873); *Finsch, Verh. z.-b. Ges. Wien*, xxix. p. 248 (1879); *Vorderm. N. T. Nederl. Ind.* xli. p. 233 (1882: Java)

- Ardea grisea*, Linn. *Syst. Nat.* i. p. 239 (1766); *Gm. Syst. Nat.* i. p. 625 (1788).  
*Ardea kwakwa*, S. G. Gmelin, *Nov. Comm. Petr.* xv. p. 452, pl. 14 (1771).  
*Ardea ferruginea*, S. G. Gmelin, *t. c.* p. 456, pl. 16.  
 Le Pouacre de Cayenne, *D'Aubent. Pl. Enl.* viii. pl. 939.  
 Le Pouacre ou Butor tacheté, *Buff. Hist. Nat. Ois.* vii. p. 427 (1780).  
 L'Hocti, *Buff. Hist. Nat. Ois.* vii. p. 382 (1780).  
*Ardea nœvia*, *Bodd. Tabl. Pl. Enl.* p. 56 (1783).  
 Night Heron, male, *Lath. Gen. Syn.* iii. pt. 1, p. 52 (1785).  
 Night Heron, female, *Lath. t. c.* p. 53.  
 Jamaica Night Heron, *Lath. t. c.* p. 54.  
 Spotted Heron, *Lath. t. c.* p. 70.  
 Gardenian Heron, *Lath. t. c.* p. 71.  
 Dry Heron, *Lath. t. c.* p. 100.  
*Ardea jamaicensis*, *Gm. Syst. Nat.* i. p. 625 (1788).  
*Ardea hoactli*, *Gm. t. c.* p. 630.  
*Ardea gardeni*, *Gm. t. c.* p. 645.  
*Ardea maculata*, *Gm. t. c.* p. 645.  
*Nycticorax europæus*, *Stephens, in Shaw's Gen. Zool.* xi. p. 609 (1819); *Frankl. P. Z. S.* 1831, p. 124 (River Ganges); *Sykes, P. Z. S.* 1832, p. 159 (Deccan); *Gould, B. Eur.* iv. pl. 279 (1837); *Dickson & Ross, P. Z. S.* 1839, p. 133 (Erzerroom); *Rüpp. Syst. Uebers.* p. 121 (1845: Egypt; Red Sea); *Hartl. Orn. W.-Afr.* p. 225 (1857: Senegambia; Cape Lopez); *E. C. Taylor, Ibis*, 1859, p. 51 (Egypt); *Hartl. J. f. O.* 1861, p. 270 (Bissao); *Kirk, Ibis*, 1864, p. 333 (Zambesi); *Degl. et Gerbe, Orn. Eur.* ii. p. 312 (1867); *Garrod, P. Z. S.* 1873, pp. 467, 637 (anatomy); *Hartl. Vög. Madag.* p. 310 (1877); *Sharpe & Bouvier, Bull. Soc. Zool. France*, iii. p. 78 (1878: M'boma, Congo); *W. A. Forbes, Ibis*, 1883, pp. 524, 533 (River Niger); *Olphe-Gall. Contr. Faun. Orn. Eur. Occ. fasc.* xv. p. 60 (1891).  
*Ardea sexsetacea*, *Vieill. Enc. Méth.* iii. p. 1130 (1823).  
*Nycticorax vulgaris*, *Ehrenb. Symb. Phys.* fol. m (1828); *D'Orbign. in Ramon de la Sagra, Hist. Nat. Cuba*, p. 208 (1839).  
*Nycticorax brevipes*, *Ehrenb. Symb. Phys.* fol. m (1828).  
*Nycticorax orientalis*, *Brehm, Vög. Deutschl.* p. 592 (1831).  
*Nycticorax badius*, *Brehm, Vög. Deutschl.* p. 592 (1831).  
*Nycticorax meridionalis*, *Brehm, Vög. Deutschl.* p. 592 (1831).  
*Nycticorax gardeni*, *Jard. ed. Wilson's Amer. Orn.* iii. p. 5, pl. lxi. figs. 2, 3 (1832); *Bp. Comp. List B. Eur. & N. Amer.* p. 48 (1838); *Thomps. B. Irel.* ii. p. 173 (1850); *Macgill. Brit. B.* iv. p. 433 (1852); *Bonap. Consp. Av.* ii. p. 141 (1855); *Gunll. J. f. O.* 1856, p. 346 (Cuba); *Scl. & Salv. Ibis*, 1859, p. 227 (Omoa; Peten); *G. C. Taylor, Ibis*, 1860, p. 313 (Fonseca Bay); *Brewer, Proc. Bost. Soc. N. H.* vii. p. 308 (1860: Cuba); *Adams, Ibis*, 1864, p. 31 (Egypt; Nubia); *Sperling, Ibis*, 1864, p. 287 (Malta; Filfolia); *Scl. & Salv. P. Z. S.* 1866, p. 199 (Upper and Lower Ucayali); *R. Gray, B. West Scotl.* p. 281 (1871: Kilmarnock); *Scl. & Salv. Nomencl. An. Neotr.* p. 126 (1873); *iid. P. Z. S.* 1879, p. 542 (Medellin); *R. Gray, Proc. Roy. Phys. Soc. Edinb.* 1880, p. 358; *A. & E. Newt. Handb. Jamaica*, p. 111 (1881); *Salvin, P. Z. S.* 1883, p. 428 (Acapulco); *Berlepsch, J. f. O.* 1884, p. 439 (Angostura, Venezuela).  
 Qua Bird or American Night Heron, *Nuttall, Man. Orn.* ii. p. 54 (1834).  
*Ardea discors*, *Nuttall, Man. Orn.* ii. p. 54 (1834).

- Nyctiardea europæa*, Swains. *Classif. B.* ii. p. 355 (1837); *Hodgs. Icon. ined. in Brit. Mus., Grall.* pl. 66, nos. 636-637; *id. in Gray's Zool. Misc.* p. 86 (1844).
- Nycticorax americana*, Bp. *Comp. List B. Eur. & N. Amer.* p. 48 (1838); *Goose, B. Jamaica*, p. 344 (1847); *Olphe-Gall. Contr. Faun. Orn. Eur. Occ. fasc. xv.* p. 62 (1861).
- Nycticorax ardeola*, Temm. *Mém. d'Orn.* iv. p. 384 (1840); *Cresson, Orn. Gard.* p. 391 (1840); *Fallon, Ois. Belg.* p. 163 (1875).
- Nycticorax griseus*, Selys-Longch. *Faun. Belg.* p. 134 (1842, irregular migrant); *Gray, List Grall. Brit. Mus.* p. 84 (1844); *id. Cat. Mamm. &c. Nepal pres. Hodgk.* p. 135 (1846); *id. Gen. B.* iii. p. 558 (1847); *Denny, P. Z. S.* 1847, p. 39 (Jamaica); *Blyth, Cat. B. Mus. As. Soc.* p. 281 (1849; Calcutta); *Bp. Connsp. Av.* ii. p. 140 (1855); *Jaub. et Barth.-Lapommi Rich. Orn.* p. 368 (1859); *Scl. & Salv. Ibis*, 1859, p. 227 (Omura; Peten); *Salv. t. c.* p. 359 (Lake of Bizerta); *Tristr. Ibis*, 1860, pp. 77, 164 (Tuggurt, breeding); *Swinh. t. c.* p. 358 (Amoy); *id. Ibis*, 1861, p. 53 (Canton); *Irby, t. c.* p. 245 (Oudh); *Sicinh. t. c.* p. 344 (Pekin), p. 423 (Formosa); *Hartl. Faun. Madag.* p. 75 (1861); *Scl. P. Z. S.* 1863, p. 223 (Banjarmassin); *Swinh. t. c.* p. 320 (China & Formosa); *Gray, Cat. Brit. B.* p. 150 (1863); *Jerd. B. Ind.* iii. p. 758 (1864); *Gigl. Ibis*, 1865, p. 60 (Pisa, May); *Gurney, t. c.* p. 272 (Natal); *Sicinhoe, t. c.* p. 542 (Swatow); *id. Ibis*, 1866, pp. 293, 297 (Formosa); *E. C. Taylor, Ibis*, 1867, p. 70 (Egypt); *Swinh. t. c.* p. 231 (Amoy); *Drake, t. c.* p. 429 (Teluan); *Layard, B. S. Afr.* p. 311 (1867; throughout the Colony); *Grandid. Rev. et Mag. de Zool.* 1867, p. 420; *Loche, Expl. Sci. Algér., Ois.* ii. p. 143 (1867); *Gurney, Ibis*, 1868, p. 256 (Natal); *Tristr. t. c.* p. 325 (Palestine); *Beaven, t. c.* p. 398 (Maunbhoorn); *Smith, t. c.* p. 454 (Portugal); *Doderl. Avif. Sicil.* p. 217 (1869); *Saunders, Ibis*, 1869, p. 180 (Spain); *Hume, t. c.* p. 238 (Agra, breeding); *Fritsch, Vog. Eur.* tab. 40, figs. 6, 7 (1870); *Gould, B. Gl. Brit.* iv. pl. 26 (1870); *Swinh. Ibis*, 1870, p. 365 (Hairan); *Salvad. Faun. Ital., Ucc.* p. 245 (1871); *Saunders, Ibis*, 1871, p. 372; *Allen, Bull. Harv. Coll.* ii. p. 359 (1871; E. Florida); *Sharpe, Ibis*, 1872, p. 74 (Fantee); *Hartl. & Finch, P. Z. S.* 1872, p. 89 (Mackenzie Is.), p. 105 (Uap); *Holdsw. t. c.* p. 478 (Ceylon); *Wald. Trans. Z. S.* viii. p. 100 (1872; Celebes); *Shelley, B. Egypt*, p. 270 (1872); *Hume & Henders. Lahore to Yark.* p. 296 (1873); *Ball, Str. F.* i. p. 88 (1873; Andamans); *Brooke, Ibis*, 1873, p. 341 (Sardinia); *Hayes Lloyd, t. c.* p. 419 (Kathiawar); *Ussher, Ibis*, 1874, p. 73 (Gold Coast); *Ball, Str. F.* ii. p. 435 (1874; Chota Nagpur); *Salvad. Ucc. Born.* p. 356 (1874); *Irby, Orn. Strs. Gibr.* p. 187 (1875); *Danf. & Harvie Brown, Ibis*, 1875, p. 425 (Transylvania); *Wald. Trans. Z. S.* ix. p. 238 (1875; Manila); *Blyth & Wald. B. Burm.* p. 161 (1875); *Barratt, Ibis*, 1876, p. 193 (Transvaal); *Blanf. East. Persia*, ii. p. 293 (1876; Isfahan; Shiraz); *Butler & Hume, Str. F.* iv. pp. 24, 35 (1876; Guzerat); *Fairb. t. c.* p. 263 (Ahmednuggur); *Hume, t. c.* p. 415 (Laccadives); *Oates, Str. F.* v. p. 168 (1877; Pegu, breeding); *Swinh. Ibis*, 1877, p. 146 (Yeddo); *Reichen. J. f. O.* 1877, p. 12 (Loango Coast); *id. t. c.* p. 237; *Tweed. P. Z. S.* 1877, p. 834 (Butuan); *Blakist. & Pryer, Ibis*, 1878, p. 223 (Tokio; Yokohama; Yamato; Tosa); *Anders. Rep. Yunnan Exped.* p. 690 (1878; Bhamo); *Hume, Str. F.* vi. p. 484 (1878; Tennasserim); *Davidson & Wenden, Str. F.* vii. p. 91 (1878; Deccan); *Ball, t. c.* p. 231 (Ganges to Godavery); *Cripps, t. c.* p. 309 (Fureedpur); *Hume, t. c.* p. 491 (Calcutta); *Dresser, B. Eur.* vi. p. 269, pl. 402 (1879).

- Bogdanoff, B. Cauc.* p. 116 (1879: Crimea; Caucasus: Aralo-Casp.; Thian Shan; Russian Songaria); *Butler, Cat. B. Sind, etc.* p. 70 (1879); *Legge, B. Ceylon*, p. 1165 (1879); *Hume, Str. F.* viii. p. 114 (1879); *Scully, t. c.* pp. 361, 366 (Nepal Valley, breeding); *Doig, t. c.* p. 372 (Eastern Narra); *Butler, Cat. B. S. Bomb. Pres.* p. 84 (1880); *Vidal, Str. F.* ix. p. 91 (1880: S. Konkan); *R. Gray, Proc. Roy. Phys. Soc. Edinb.* 1880, p. 355 (Clackmannan); *Biddulph, Ibis*, 1881, p. 99 (Gilgit, May); *Scully, t. c.* p. 592; *Butler, Str. F.* ix. p. 435 (1881: Deccan); *Reid, Str. F.* x. p. 76 (1881: Lucknow); *Bocage, Orn. Angola*, p. 449 (1881: Mossamedes; Rio Coroca; Humbe); *Milne-Edwards & Grandid. Hist. Nat. Madag., Ois.* p. 564, pls. ccxxviii. & ccxxix. (1882); *Butler, Feilden, & Reid, Zool.* 1882, p. 344 (Natal); *Holub & von Pelz. Beitr. Orn. Südaf.* p. 277 (1882); *Shelley, Ibis*, 1882, p. 364 (Mashoonaland); *Blakist. & Pryer, B. Japan*, p. 117 (1882: throughout the Islands); *Davidson, Str. F.* x. p. 324 (1882: W. Khandeish); *B. O. U. List Brit. B.* p. 110 (1883); *Seebohm, Ibis*, 1883, p. 32 (Caucasus, breeding); *Parker, t. c.* pp. 194, 195 (Ceylon); *Seebohm, t. c.* p. 398 (Dobrukscha, breeding); *Davison, Str. F.* x. p. 417 (1883: Wynaad); *Sharpe, ed. Layard's B. S. Afr.* p. 724 (1884); *Salvad. Ann. Mus. Genov.* (2) i. p. 229 (1884: Shoa); *Scl. P. Z. S.* 1884, p. 2 (Plumstead marshes, Kent); *Saunders, ed. Yarrell's Brit. B.* iv. p. 195 (1884); *Eagle Clarke, Ibis*, 1884, p. 146 (Obedska Bara; Dobanovci, breeding); *Ayres, t. c.* p. 233 (Potchefstroom); *Seebohm, t. c.* p. 268 (Kiukiang); *Tristr. Faun. & Flor. Palest.* p. 111 (1884: Lakes Huleh and Gennesaret); *Murray, Vertebr. Faun. Sind*, p. 276 (1884); *Vorderm. N. T. Nederl. Ind.* xlv. p. 202 (1884: Java); *Whitehead, Ibis*, 1885, p. 44 (Corsica); *Swinh. & Barnes, t. c.* p. 136 (Mhow); *Fischer, J. f. O.* 1885, p. 118 (Wapokomoland); *Sharpe, Ibis*, 1886, p. 491 (Fao), p. 499 (Bushire); *Gigl. Avif. Ital.* pp. 285, 541 (1886); *Salvad. Elenco Ucc. Ital.* p. 246 (1886); *Reichen. J. f. O.* 1887, p. 50 (Kagehi); *Koenig, J. f. O.* 1888, p. 275 (Tunis); *Hume, Str. F.* xi. p. 337 (1888: Manipur); *Lilford, Col. Fig. Brit. B.* pt. vii. (1888); *St. John, Ibis*, 1889, p. 178 (Candahar); *Lilford, t. c.* p. 344 (Limasol, Cyprus); *Gigl. Avif. Ital., 1st Resoc.* p. 444 (1889); *Saunders, Man. Brit. B.* p. 367 (1889); *Reichen. Syst. Verz. Vög. Deutschl.* p. 41 (1889); *id. J. f. O.* 1889, p. 263 (Quilimane); *Vorderm. Nat. Tijdschr. Nederl. Ind.* xlix. p. 417 (1889: Sumatra); *Brusina, Motr. etc. (Orn. Croatica)*, p. 74 (1890); *Sharpe, Ibis*, 1890, pp. 148, 285 (Labuan); *Koenig, J. f. O.* 1890, p. 313 (Madeira); *Steere, List Mamm. & Birds Philipp. Exped.* p. 27 (1890: Luzon); *Gigl. Avif. Ital., 2nd Resoc.* p. 656 (1890), *3rd Resoc.* p. 514 (1891); *Sharpe, Sci. Res. 2nd Yark. Miss., Aves*, p. 125 (1891); *Styan, Ibis*, 1891, pp. 327, 493 (Lower Yangtse); *Dresser, t. c.* p. 369 (Erzerroom); *Sibree, Ibis*, 1892, p. 117 (Madagascar); *De la Touche, t. c.* p. 487 (Foochow and Swatow); *Hartert, t. c.* p. 512 (E. Prussia, breeding); *Shelley, Ibis*, 1893, p. 29 (Mpimbi, Upper Shiré); *Meade Waldo, t. c.* p. 198 (Canary Is.); *Hose, t. c.* p. 420 (Lake Ansok, Baram, breeding); *Styan, t. c.* p. 434 (Hainan).
- Nycterodius nycticorax*, *Macgill. Man. Brit. B.* ii. p. 147 (1842).
- The Night Heron, *Yarrell, Brit. B.* ii. p. 485 (1843).
- Nycticorax naevius*, *Gray, Gen. B.* iii. p. 558 (1847); *Léotaud, Ois. Trinidad.* p. 431 (1866); *Scl. & Salv. P. Z. S.* 1873, p. 305 (Upper and Lower Ucayali); *Salv. Ibis*, 1886, p. 170 (British Guiana).
- Nycticorax nycticorax*, *Licht. Nomencl. Av. Mus. Berol.* p. 90 (1854); *Seebohm, Hist. Brit. B.* ii. p. 496 (1884); *id. Ibis*, 1887, p. 181

- (Loo Choo Is.); *Stejn. Proc. U.S. Nat. Mus.* x. p. 295 (1887: Japan); *Seeböhm, B. Japan. Emp.* p. 222 (1890); *Sharpe, Ibis*, 1894, p. 541 (Lawas River, March); *Reichen. Vög. deutsch-Ost-Afr.* p. 63 (1894).
- Scotæus nycticorax*, *Heugl. Syst. Uebers.* p. 59 (1856: Tana Lake, Abyss.); *Serertz. Turkest. Jerotn.* p. 68 (1873: breeding); *Bogd. B. Cauc.* p. 168 (1879); *Radde, Orn. Cauc.* pp. 42, 405 (1884: Tiflis to 6200 ft.; Lenkoran).
- Scotæus guttatus*, *Heugl. Syst. Uebers.* p. 59 (1856).
- Nyctiardea gardeni*, *Baird, B. N. Amer.* p. 678 (1858); *Verr. Proc. Essex Inst.* iii. p. 158 (1862: Maine, breeding); *Allen, op. cit.* iv. p. 76 (1864: Maine); *March, Proc. Philad. Acad.* 1864, p. 65 (Jamaica); *Laur. Ann. Lyc. N. Y.* viii. p. 292 (1868: New York); *Dresser, Ibis*, 1868, p. 32 (S. Texas); *Coues, t. c.* p. 263 (Arizona); *id. Proc. Philad. Acad.* 1866, p. 95; *id. Proc. Bost. Soc. N. H.* xii. p. 123 (1868: S. Carolina); *Allen, Mem. Bost. Soc. N. H.* i. p. 507 (1868: Illinois); *Brown, Ibis*, 1868, p. 428 (Vancouver Isl.).
- Nyctiardea nycticorax*, *Swinh. P. Z. S.* 1871, p. 413 (resident throughout China and Formosa); *Gray, Hand-l. B.* iii. p. 33, no. 10171 (1871); *Hume, Nests & Eggs Ind. B.* p. 624 (1873); *id. Str. F.* i. p. 256 (1873), ii. p. 315 (1874: Nicobars), iii. p. 192 (1875: Pegu); *Armstr. Str. F.* iv. p. 350 (1876: Elephant Point, Rangoon); *Dresser, Ibis*, 1876, p. 325; *David & Oust. Ois. Chine*, p. 444 (1877); *Butler, Str. F.* vii. p. 189 (1878); *Poig, t. c.* p. 467 (East. Narra, breeding); *Oates, Handb. B. Brit. Burm.* ii. p. 259 (1883); *id. ed. Hume's Nests & Eggs Ind. B.* iii. p. 258 (1890); *Fritalsky, Av. Hung.* p. 133 (1891); *Madarász, Erläut. Ausst. Ungar. Vögelf.* p. 106 (1891).
- Nycticorax ægyptius*, *Gurney, in Anders. B. Dam. Ld.* p. 293 (1872: Ondonga; Orange R.; Damara-land); *Ayres, Ibis*, 1874, p. 104 (Transvaal).
- Nyctiardea grisea*, var. *nævia*, *Allen, Bull. Harv. Coll.* iii. p. 182 (1872: East. Kansas); *Coues, Key N. Amer. B.* p. 269 (1872); *id. B. N.-West*, p. 523 (1874); *Hensh. Rep. Zool. Expl. 100th Merid.* p. 466 (1875: Utah); *Reid, Zool.* 1877, p. 480 (Bermudas); *Coues, Bull. U.S. Geol. Survey.* iv. p. 646 (1878: Moose R.); *Merrill, Proc. U.S. Nat. Mus.* i. p. 164 (1878: Ft. Brown, S. Texas); *Baird, Brewer, & Ridgw. Water-Birds N. Amer.* i. p. 55 (1884); *Coues, Key N. Amer. B.* 2nd ed. p. 662 (1884).
- Nyctiardea nævia*, *Laur. Mem. Bost. Soc. N. H.* ii. p. 311 (1874: Mazatlan; Rio de Coahuana); *Sennett, Bull. U.S. Geol. Surv.* iv. p. 61 (1878: S. Texas, breeding).
- Nyctiardea grisea*, var. *gardeni*, *Laur. Ann. Lyc. N. Y.* x. p. 386 (1874: Illinois).
- Nyctiardea grisea*, β. *nævia*, *Belding, Proc. U.S. Nat. Mus.* i. p. 442 (1878: Stockton, Cal.).
- Nyctiardea grisea*, *Maynard, B. East. N. Amer.* p. 416 (1879).
- Nyctiardea grisea nævia*, *Ridgw. Proc. U.S. Nat. Mus.* iii. p. 197 (1880); *Hart Merriam, Bull. Nutt. Orn. Club*, vii. p. 128 (1882: New York); *Batchelor, t. c.* p. 151 (Upper St. John); *Nehrling, t. c.* p. 223 (S.E. Texas, breeding); *Brewst. op. cit.* viii. p. 36 (1883: Tucson); *Bailey, t. c.* p. 42 (Georgia, April, breeding); *Talbot, Auk*, i. p. 96 (1884: Wall Lake, Dak.); *Brown, t. c.* p. 122 (Texas); *Hoffm. Auk*, ii. p. 10 (1885); *Loomis, t. c.* p. 192 (S. Carolina); *Agerab. t. c.* p. 287 (Missouri R., S.E. Dakota).
- Nycticorax griseus nævius*, *Nutting, Proc. U.S. Nat. Mus.* v. p. 406 (1882: Costa Rica); *Belding, t. c.* p. 544 (Lower California).

*Nycticorax nycticorax nœvius*, *Zeledon, Proc. U.S. Nat. Mus.* viii. p. 113 (1885: Costa Rica); *Ferrari-Perez, Proc. U.S. Nat. Mus.* ix. p. 170 (1886: Puebla; Vera Cruz; Jalapa); *Everm. Auk*, iii. p. 91 (1886: Ventura Co., Cal.); *Seton, t. c.* p. 150 (Manitoba, summer); *Smith, t. c.* p. 285 (Fort Collins, Color.); *Fox, t. c.* p. 319 (Tennessee); *Scott, t. c.* p. 385 (Santa Cruz, Ariz.); *A.O.U. Check-l. N. Amer. B.* p. 138 (1886); *Scott, Auk*, iv. pp. 136, 281 (1887: Gulf Coast of Florida); *Chamberlain, t. c.* p. 264 (St. John's, New Brunswick, Jan.); *Ridgw. Man. N. Amer. B.* p. 133 (1887); *Stejn. Proc. U.S. Nat. Mus.* x. p. 84 (1887: Kauai; Hawaii), xi. p. 102 (1888); *Richmond, Auk*, v. p. 20 (1888: District Columbia); *Cory, t. c.* p. 49 (Greater Antilles); *Merrill, t. c.* p. 144 (Fort Klamath, breeding); *Chapm. t. c.* p. 269 (Gainesville, Florida); *Kumlien, t. c.* p. 328 (Wisconsin); *Everm. t. c.* p. 348 (Indiana); *Scott, Auk*, vi. p. 18 (1889: Florida); *Cory, B. West Indies*, p. 250 (1889); *Thompson, Proc. U.S. Nat. Mus.* xiii. p. 491 (1890: Manitoba); *Mearns, Auk*, vii. p. 51 (1890: Mormon Lake, Ariz.); *Scott, t. c.* p. 308 (Dry Tortugas); *Shick, t. c.* p. 327 (New Jersey, breeding); *Northrop, Auk*, viii. pp. 66, 78 (1891: Andros Isl.); *Brewst. & Chapm. t. c.* p. 137 (Suwanee River); *Ridgw. t. c.* p. 335 (Abaco, Bahamas); *Scott, Auk*, ix. p. 10 (1892: Jamaica); *Lawr. t. c.* p. 42 (Gray's Harbour); *Scott, t. c.* p. 212 (Caloosahatchie Region, Florida); *Attwater, t. c.* p. 232 (San Antonio, Texas).

*Adult male in breeding-plumage.* Black above, glossed with dark green, and with a slight shade of slaty grey on the mantle; upper scapulars like the back, the lower ones light ashy grey; wings entirely light ashy grey or dove-colour, with a slight shade of dull oily-green on the secondaries; lower back, rump, upper tail-coverts, and tail clear grey or dove-colour; head crested, black, with a dark green gloss, and having two long nuchal white plumes; base of forehead white, extending above the eye to behind the latter; feathers below the eye, cheeks, throat, and underparts pure white; ear-coverts and sides of neck delicate isabelline-grey, extending in a collar round the hind-neck, and also to the sides of the body; thighs and under tail-coverts white; under wing-coverts and axillaries very pale ashy. Total length about 18 inches, culmen 3, wing 10.5, tail 4, tarsus 2.8.

*Adult female in breeding-plumage.* Similar to the male in colour, and having the same long white plumes on the nape: "upper mandible slaty-black with a whitish streak near the edges, central portion of lower mandible flesh-colour, greenish towards the base; skin round the eye pale green; tarsi and feet pale yellow; iris crimson" (*T. Ayres*).

*Adults in winter plumage.* Similar to the breeding-plumage, but much greener on the head and back, and not having the drooping white plumes on the nape.

*Young.* Brown above, varied with longitudinal triangular centres of rufous or buff to the feathers of the back and wing-coverts; the quills and tail-feathers tipped with white; the head blackish, the crest-feathers centred with rufous; sides of face and under surface of body fulvescent, streaked with dusky black, with which the feathers are margined; the thighs streaked like the sides of the



body, as also the under wing-coverts and axillaries; throat whitish.

The full-grown young bird is similarly marked to the nestling described, but all the streaks and spots are much paler, the throat and under surface of body being white, with a few dusky streaks. Judging from a specimen in the Tweeddale Collection from Canton, the adult plumage is assumed during the next breeding season, and even the white nape-plumes are put on, but the colouring of the head and back is not so bright as in older birds.

*Hab.* Southern and Central Europe, throughout Africa, and across Asia to China and Japan in suitable localities, not extending far north, and ranging into the Moluccas. North America to the Lesser Antilles, Colombia, and Ecuador.

|                                            |                                                                  |                                    |
|--------------------------------------------|------------------------------------------------------------------|------------------------------------|
| <i>a.</i> Ad. st.                          | Halifax, Yorkshire.                                              | Old Coll.                          |
| <i>b, c.</i> ♂ ad. sk.                     | Hanság Marshes, Hungary,<br>May 1821.                            | Dr. R. B. Sharpe<br>[P.]           |
| <i>d, e.</i> ♂ ad. et juv.<br>sk.          | Hungary, May, Aug.                                               | Hungarian National<br>Museum.      |
| <i>f.</i> Ad. st.                          | Athens.                                                          | Consul Merlin [P.]                 |
| <i>g.</i> Ad. sk.                          | Tangiers ( <i>Sir J. D. Hay</i> ).                               | Shelley Coll.                      |
| <i>h, i.</i> Ad. et juv.<br>sk.            | Fantee, Gold Coast ( <i>H. T. Ussher &amp; H. F. Blissett</i> ). | Shelley Coll.                      |
| <i>k.</i> Ad. st.                          | Transvaal ( <i>T. Ayres</i> ).                                   | Shelley Coll.                      |
| <i>l.</i> ♂ juv. sk.                       | Potchefstroom, Transvaal,<br>Aug. ( <i>T. Ayres</i> ).           | Gurney Coll.                       |
| <i>m.</i> ♀ ad. sk.                        | Potchefstroom, July 10 ( <i>T. Ayres</i> ).                      | Shelley Coll.                      |
| <i>n.</i> Imm. sk.                         | Elands Post ( <i>T. Atmore</i> ).                                | Dr. R. B. Sharpe<br>[P.]           |
| <i>o, p.</i> ♂ ad. sk.                     | Upper Shiré River, Nov.,<br>Feb. ( <i>A. Whyte</i> ).            | H. H. Johnston,<br>Esq., C.B. [P.] |
| <i>q.</i> Juv. sk.                         | Aden.                                                            | C. Chevallier, Esq.<br>[P.]        |
| <i>r, s.</i> Ad. et juv.<br>sk.            | Egypt, March.                                                    | Shelley Coll.                      |
| <i>t, u.</i> Ad. sk.                       | Cyprus ( <i>F. H. H. Guille-<br/>mard</i> ).                     | Lord Lilford [P.]                  |
| <i>v.</i> ♂ ad. sk.                        | Turkey, April 30 ( <i>T. Robson</i> ).                           | Tweeddale Coll.                    |
| <i>x. r.</i> Ad.; <i>y-b'.</i><br>Juv. sk. | Bagdad.                                                          | K. Loftus, Esq. [P.]               |
| <i>c', d'.</i> Ad.; <i>e'.</i><br>Juv. sk. | Fao, Persian Gulf.                                               | W. D. Cumming,<br>Esq. [P.]        |
| <i>f'.</i> Ad. sk.                         | Bushire, Persian Gulf, April.                                    | A. J. V. Palmer,<br>Esq. [P.]      |
| <i>g'.</i> Ad. sk.                         | Afghanistan ( <i>Griffith</i> ).                                 | India Museum.                      |
| <i>h'.</i> Ad. sk.                         | Quetta, August.                                                  | Colonel Swinhoe<br>[P.]            |
| <i>i'.</i> ♂ ad. sk.                       | Jacobabad, Sindh, Dec. 25<br>( <i>A. O. H.</i> ).                | Hume Coll.                         |
| <i>k'.</i> ♂ juv. sk.                      | Karachi, Sept. 18 ( <i>E. A. Butler</i> ).                       | Hume Coll.                         |
| <i>l'.</i> Juv. sk.                        | Sindh, Jan. 8.                                                   | Hume Coll.                         |
| <i>m'.</i> ♂ ad.; <i>n, o.</i><br>Juv. sk. | Moultan, Oct. 29.                                                | Hume Coll.                         |
| <i>p, q'.</i> Ad. sk.                      | Cashmere.                                                        | Pinwill Coll.                      |



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| r'. ♀ ad. sk.                                                          | Gilgit, July 8.                                                           | Colonel Biddulph<br>[C.]. |
| s'. ♀ juv. sk.                                                         | Delhi, Oct. 5 ( <i>C. T. Bingham</i> ).                                   | Hume Coll.                |
| t', u', v'. Ad.; w'.<br>♀ ad.; x'. ♀<br>juv. sk.                       | Sultanpur, Gurgaon Distr.,<br>March to May, Sept. ( <i>W. N. Chill</i> ). | Hume Coll.                |
| y'. Ad. sk.                                                            | Jhansie, April.                                                           | Hume Coll.                |
| z'. ♀ ad. sk.                                                          | Etawah, Nov. 7 ( <i>W. E. Brooks</i> ).                                   | Hume Coll.                |
| a'', b'', c''. Ad.;<br>d''. Juv. sk.                                   | Etawah, Feb., Sept.                                                       | Hume Coll.                |
| e'', f''. ♂ ad. sk.                                                    | Allahabad, Dec. 1.                                                        | Hume Coll.                |
| g''. ♀ ad. sk.                                                         | Futtehgurh, Aug. ( <i>A. Anderson</i> ).                                  | Hume Coll.                |
| h'', i''. ♂ ad.; k''.<br>Pull. sk.                                     | Chumparun Distr., Oudh,<br>Jan., April ( <i>R. M. Adam</i> ).             | Hume Coll.                |
| l'', m''. Ad. et juv.<br>sk.                                           | Nepal.                                                                    | Hodgson Coll.             |
| n'', o''. ♀ ad. et<br>juv. sk.                                         | Nepal Valley, Aug., Sept. ( <i>J. Scully</i> ).                           | Hume Coll.                |
| p'', q'', r''. ♂ ad.;<br>s'', t''. ♀ ad. sk.                           | Nepal Valley, July, Sept.                                                 | Dr. J. Scully [P.].       |
| u'', v'', w''. Ad.<br>et juv. sk.                                      | Darjeeling, Dec. to Feb. ( <i>L. Mandelli</i> ).                          | Hume Coll.                |
| x'. ♂ ad. sk.                                                          | Shillong, Aug. ( <i>J. Cockburn</i> ).                                    | Hume Coll.                |
| y'', z'. ♂ ♀ ad.<br>sk.                                                | Moirang, Manipur, March<br>14 ( <i>A. O. H.</i> ).                        | Hume Coll.                |
| a <sup>2</sup> -d <sup>2</sup> . Ad. et juv.<br>sk.                    | Dacca.                                                                    | Hume Coll.                |
| e <sup>2</sup> . ♀ juv. sk.                                            | Faridpur, July ( <i>J. R. Cripps</i> ).                                   | Hume Coll.                |
| f <sup>2</sup> . Juv. sk.                                              | Calcutta.                                                                 | Hume Coll.                |
| g <sup>2</sup> , h <sup>2</sup> . ♂ ♀ ad. sk.                          | Raipur, June 1.                                                           | Hume Coll.                |
| i <sup>2</sup> . ♂ juv. sk.                                            | Sumbalpur, Jan. 14.                                                       | Hume Coll.                |
| k <sup>2</sup> , l <sup>2</sup> . Ad. sk.                              | Khandeish.                                                                | India Museum.             |
| m <sup>2</sup> . ♀ juv. sk.                                            | Ahmednuggur, Feb. 7 ( <i>S. B. Fairbank</i> ).                            | Tweeddale Coll.           |
| n <sup>2</sup> . ♂ ad. sk.                                             | Malvan, S. Konkan, Jan. 19<br>( <i>G. Vidal</i> ).                        | Hume Coll.                |
| o <sup>2</sup> , p <sup>2</sup> . ♂ ad. sk.                            | Isl. of Elephanta, Jan. 7.                                                | Hume Coll.                |
| q <sup>2</sup> . ♀ juv. sk.                                            | St. George's Isl., Laccadives, Feb. 5 ( <i>A. O. H.</i> ).                | Hume Coll.                |
| r <sup>2</sup> , s <sup>2</sup> . Juv. sk.                             | Madras.                                                                   | Hume Coll.                |
| t <sup>2</sup> . ♀ ad. sk.                                             | Ceylon, July 28.                                                          | Colonel Legge [P.].       |
| u <sup>2</sup> . ♀ ad.; v <sup>2</sup> . ♂<br>juv. sk.                 | Lower Pegu, Nov., Jan. ( <i>E. W. O.</i> ).                               | Oates Coll.               |
| w <sup>2</sup> . ♀ ad. sk.                                             | Sittang River, Sept. 18 ( <i>R. G. W. R.</i> ).                           | Tweeddale Coll.           |
| x <sup>2</sup> , y <sup>2</sup> . ♂ ad.; z <sup>2</sup> .<br>♀ ad. sk. | Rangoon, Dec. ( <i>R. G. W. R.</i> ).                                     | Tweeddale Coll.           |
| a <sup>3</sup> . ♂ juv. sk.                                            | Yeaboo, Attaran River, Tennasserim, Aug. 9 ( <i>W. Davison</i> ).         | Hume Coll.                |
| b <sup>3</sup> . ♀ imm. sk.                                            | Gyne River, Aug. 8 ( <i>W. Davison</i> ).                                 | Hume Coll.                |
| c <sup>3</sup> . Ad. sk.                                               | Malacca ( <i>Dr. Maingay</i> ).                                           | Tweeddale Coll.           |

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| <i>d</i> <sup>1</sup> . Juv. sk.                                                                                                         | Penang ( <i>Dr. Cantor</i> ).                                               | India Museum.              |
| <i>e</i> <sup>1</sup> . Juv. sk.                                                                                                         | Java ( <i>Leyden Museum</i> ).                                              | Salvin-Godman Coll.        |
| <i>f</i> <sup>1</sup> . ♂ juv. sk.                                                                                                       | Mt. Kalulong, Sarawak, Feb.                                                 | C. Hose, Esq. [P.].        |
| <i>g</i> <sup>1</sup> . ♂ ad. sk.                                                                                                        | Ayer Pannas, Celebes, Aug.<br>23 ( <i>Von Rosenberg</i> ).                  | Salvin-Godman Coll.        |
| <i>h</i> <sup>1</sup> . Ad. sk.                                                                                                          | Celebes.                                                                    | Tweeddale Coll.            |
| <i>i</i> <sup>1</sup> , <i>k</i> <sup>1</sup> . ♂ ad. sk.                                                                                | Manila ( <i>Maitland Heriot</i> ).                                          | Tweeddale Coll.            |
| <i>l</i> <sup>1</sup> , <i>m</i> <sup>1</sup> . Ad. et juv.<br>sk.                                                                       | Canton, China.                                                              | Tweeddale Coll.            |
| <i>n</i> <sup>1</sup> , <i>o</i> <sup>1</sup> . Ad. sk.                                                                                  | Foochow.                                                                    | Seeböhm Coll.              |
| <i>p</i> <sup>1</sup> , <i>q</i> <sup>1</sup> , <i>r</i> <sup>1</sup> . ♂ ad. et<br>imm. sk.                                             | Foochow, May ( <i>H. Swinhoe</i> ).                                         | Seeböhm Coll.              |
| <i>s</i> <sup>1</sup> . Juv. sk.                                                                                                         | Shanghai, Dec. 10.                                                          | J. R. Reeves, Esq.         |
| <i>t</i> <sup>1</sup> . Ad. sk.                                                                                                          | Amoy, Feb. ( <i>R. Swinhoe</i> ).                                           | Seeböhm Coll.              |
| <i>u</i> <sup>1</sup> . Ad. sk.                                                                                                          | S.W. Formosa, Aug.                                                          | Tweeddale Coll.            |
| <i>v</i> <sup>1</sup> . Ad. sk.                                                                                                          | Formosa.                                                                    | Salvin-Godman Coll.        |
| <i>w</i> <sup>1</sup> , <i>x</i> <sup>1</sup> , <i>y</i> <sup>1</sup> . Ad. et<br>imm. sk.                                               | Formosa, Nov., Dec. ( <i>R.<br/>Swinhoe</i> ).                              | Seeböhm Coll.              |
| <i>z</i> <sup>1</sup> , <i>a</i> <sup>2</sup> . Ad.; <i>b</i> <sup>2</sup> , <i>c</i> <sup>2</sup> ,<br><i>d</i> <sup>2</sup> . Juv. sk. | Nagasaki, Japan.                                                            | F. Ringer, Esq. [P.].      |
| <i>e</i> <sup>2</sup> <i>f</i> <sup>2</sup> . Ad. et imm.<br>sk.                                                                         | Yokohama ( <i>H. Pryer</i> ).                                               | Seeböhm Coll.              |
| <i>k</i> <sup>2</sup> . Ad. sk.                                                                                                          | North America ( <i>Hensh Coll</i> ).                                        | Salvin-Godman Coll.        |
| <i>h</i> <sup>2</sup> . ♂ juv. sk.                                                                                                       | Treport, New York, Sept. 22<br>( <i>C. H. Merriam: Hensh.<br/>Coll.</i> ).  | Salvin-Godman Coll.        |
| <i>m</i> <sup>2</sup> . Juv. sk.                                                                                                         | Cambridge, Mass. ( <i>Hensh.<br/>Coll.</i> ).                               | Salvin-Godman Coll.        |
| <i>n</i> <sup>2</sup> . ♂ ad. sk.                                                                                                        | New Haven, Conn., April<br>( <i>A. J. Dayan: Hensh.<br/>Coll.</i> ).        | Salvin-Godman Coll.        |
| <i>o</i> <sup>1</sup> . ♂ ad. sk.                                                                                                        | Logan, Illinois, April 17<br>( <i>Greene Smith: Hensh.<br/>Coll.</i> ).     | Salvin-Godman Coll.        |
| <i>p</i> <sup>1</sup> . Juv. sk.                                                                                                         | Bermuda.                                                                    | Capt. Savile Reid<br>[C.]. |
| <i>q</i> <sup>2</sup> , <i>r</i> <sup>2</sup> . Ad. et juv.<br>sk.                                                                       | Gainaville, Florida, April,<br>May ( <i>J. Bell: Hensh.<br/>Coll.</i> ).    | Salvin-Godman Coll.        |
| <i>s</i> <sup>2</sup> . ♀ ad. sk.                                                                                                        | Do Soto Co., Florida, Dec. 8<br>( <i>W. R. Dean</i> ).                      | Salvin-Godman Coll.        |
| <i>t</i> <sup>2</sup> - <i>y</i> <sup>2</sup> . ♂ ad. et juv.;<br><i>z</i> <sup>2</sup> - <i>d</i> <sup>2</sup> . ♀ ad. et<br>juv. sk.   | Tarpon Springs, Florida,<br>July, Aug., Oct. ( <i>W. E.<br/>D. Scott</i> ). | Salvin-Godman Coll.        |
| <i>e</i> <sup>2</sup> . ♀ ad. sk.                                                                                                        | Brownsville, Texas, March 12.                                               | Salvin-Godman Coll.        |
| <i>f</i> <sup>2</sup> - <i>i</i> <sup>2</sup> . ♂ ad. sk.                                                                                | Corpus Christi, June, July.                                                 | Salvin-Godman Coll.        |
| <i>k</i> <sup>2</sup> , <i>l</i> <sup>2</sup> . ♂ ad. et<br>juv.; <i>m</i> <sup>2</sup> . ♀ imm.<br>sk.                                  | Presidio, Mexico, Jan., Feb.<br>( <i>A. Forrer</i> ).                       | Salvin-Godman Coll.        |
| <i>n</i> <sup>2</sup> . ♂ ad. sk.                                                                                                        | Tampico, Mexico, June ( <i>W.<br/>B. Richardson</i> ).                      | Salvin-Godman Coll.        |
| <i>o</i> <sup>2</sup> . ♂ juv. sk.                                                                                                       | Agua Calientes, Aug. ( <i>W.<br/>B. Richardson</i> ).                       | Salvin-Godman Coll.        |
| <i>p</i> <sup>2</sup> . ♂ ad. sk.                                                                                                        | Colotlan, Jalisco, March 21<br>( <i>W. B. Richardson</i> ).                 | Salvin-Godman Coll.        |
| <i>q</i> <sup>2</sup> . Ad. sk.                                                                                                          | Acapulco, March ( <i>A. H.<br/>Markham</i> ).                               | Salvin-Godman Coll.        |

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|------------------------------------------------------------------------------------|---------------------------------------------------------|---------------------|
| <i>r</i> <sup>6</sup> , <i>s</i> <sup>6</sup> . Ad. et juv. sk.                    | Choctum, Guatemala (O. Salvin).                         | Salvin-Godman Coll. |
| <i>t</i> <sup>6</sup> - <i>w</i> <sup>6</sup> . Ad. et imm. sk.                    | St. Vincent, West Indies, Sept. ( <i>D. W. Smith</i> ). | Salvin-Godman Coll. |
| <i>x</i> <sup>6</sup> , <i>y</i> <sup>6</sup> . Ad. et imm. sk.                    | Grenada, W. I., June, July ( <i>D. W. Smith</i> ).      | Salvin-Godman Coll. |
| <i>z</i> <sup>6</sup> . ♀ ad. sk.                                                  | Medellin, U.S. Colombia ( <i>T. K. Salmon</i> ).        | Salvin-Godman Coll. |
| <i>a</i> <sup>7</sup> . Ad. sk.                                                    | Balzar Mountains, Ecuador ( <i>Illingworth</i> ).       | Salvin-Godman Coll. |
| <i>b</i> <sup>7</sup> . Imm. sk.                                                   | Sarayacu, Ecuador ( <i>C. Buckley</i> ).                | Salvin-Godman Coll. |
| <i>c</i> <sup>7</sup> , <i>d</i> <sup>7</sup> , <i>e</i> <sup>7</sup> . Skeletons. |                                                         | Purchased.          |
| <i>f</i> <sup>7</sup> . Bones of trunk.                                            | Nepal.                                                  | Hodgson Coll.       |
| <i>g</i> <sup>7</sup> . Skull.                                                     |                                                         | Yarrell Coll.       |
| <i>h</i> <sup>7</sup> . Skull.                                                     | Würtemberg.                                             | Dr. Günther [C.].   |
| <i>i</i> <sup>7</sup> . Sternum.                                                   | Algeria.                                                | M. Lefebvre.        |
| <i>k</i> <sup>7</sup> . Sternum.                                                   | Jamaica.                                                | Gosse Coll.         |

## 2. *Nycticorax tayazu-guira*.

*Garza parda chorreada*, Azara, *Apunt.* iii. p. 168 (1803).

*Garza tayazu-guira*, Azara, *t. c.* p. 173.

*Ardea tayazu-guira*, Vieill. *N. Dict. d'Hist. Nat.* xiv. p. 417 (1817).

? *Ardea nycticorax*, Newwied, *Beitr. Naturg. Bras.* iv. Abth. 2, p. 646 (1833).

*Nycticorax gardeni* (pt.), Gray, *List Grall. Brit. Mus.* p. 85 (1844).

*Nycticorax americanus* (nec Bp.), Tschudi & Cab. *Faun. Peruan., Aves*, pp. 50, 297 (1845-46); Hartl. *Ind. Azara*, pp. 22, 23 (1847); *Tacz. P. Z. S.* 1874, p. 555 (Junin).

*Ardea gardeni* (nec Gm.), Burm. *Th. Bras.* iii. p. 405 (1856); *id. Reise La Plata-St.* ii. p. 508 (1861: Parana).

*Nycticorax gardeni* (nec Gm.), *Scl. P. Z. S.* 1860, p. 386 (Berkeley Sound); Abbott, *Ibis*, 1861, p. 157 (Falkland Is.); Pelz. *Orn. Bras.* p. 303 (1871: Sapitiba; Ypanema; Rio de Janeiro; Curitiba; Irisanga; Cuyaba; Caiçara); *Tacz. P. Z. S.* 1877, p. 329 (Peru); Barrows, *Auk*, i. p. 271 (1884: Lower Uruguay); *Tacz. Orn. Pérou*, iii. p. 407 (1886: Junin; Tumbes).

*Nycticorax obscurus* (nec Licht.), *Scl. Ibis*, 1861, p. 312; *id. P. Z. S.* 1864, p. 73 (Falkland Is.); *Scl. & Salv. Ibis*, 1869, p. 284 (Tyssen Isl., Falkland Sound); Durnf. *Ibis*, 1877, p. 40 (Chuput Valley), p. 189 (Buenos Ayres), 1878, p. 63 (Buenos Ayres), p. 399 (Sengel); *Scl. & Salv. P. Z. S.* 1878, p. 436 (Falkland Is.); *Scl. P. Z. S.* 1879, p. 310 (eggs: Falklands); Gibson, *Ibis*, 1880, pp. 156, 158 (Cape San Antonio, breeding); White, *P. Z. S.* 1882, p. 624 (Buenos Ayres; Salta); *Tacz. Orn. Pérou*, iii. p. 406 (1886: Lake Titicaca); Withington, *Ibis*, 1888, p. 471 (Lomas de Zamora); *Scl. & Huds. Arg. Orn.* ii. p. 105 (1889); Holland, *Ibis*, 1890, p. 425, 1892, p. 205 (Estancia Espartilla); *Scl. P. Z. S.* 1891, p. 136 (Sacaya; Tarapacá).

**Adult.** Similar to *N. nycticorax*, but larger, and having the entire under surface pervaded with grey except on the throat, lower abdomen, and vent, which are white; forehead and eyebrow also white: "upper mandible and tip of lower one black, remainder of lower mandible yellowish green; feet light pea-green, underside

with a tinge of yellow; iris dull crimson" (*H. Durnford*). Total length about 24 inches, culmen 3·2, wing 13·3, tail 5·4, tarsus 3·5.

*Hab.* South America, from the Falkland Islands to Patagonia and Chili, northwards to Peru and Central Brazil.

|                                  |                                                                |                           |
|----------------------------------|----------------------------------------------------------------|---------------------------|
| a, b. ♂ ad. et juv. sk.          | Tinta, Peru, June, July ( <i>H. Whitely</i> ).                 | Tweeddale Coll.           |
| c. ♂ ad. sk.                     | Tinta, July 23 ( <i>H. Whitely</i> ).                          | Salvin-Godman Coll.       |
| d. Juv. sk.                      | Lake Titicaca, Peru.                                           | Salvin-Godman Coll.       |
| e, f. Ad. sk.                    | Bolivia ( <i>D. Forbes</i> ).                                  | Salvin-Godman Coll.       |
| g-h. ♂ ad. et juv.; m. ♀ ad. sk. | Sacaya, Tarapaca, Jan. to April.                               | Berkeley James Coll.      |
| n. ♀ juv. sk.                    | Lomas de Zamora, Buenos Ayres, Sept. ( <i>F. Withington</i> ). | Sclater Coll.             |
| o, p. Ad. sk.                    | Falkland Islands.                                              | Salvin-Godman Coll.       |
| q. ♀ juv. sk.                    | Falkland Islands.                                              | Voy. H.M.S. 'Challenger.' |
| r. ♂ ad. sk.                     | Falkland Islands.                                              | Antarctic Exped.          |
| s. ♂ juv.; t. ♀ ad. sk.          | Falkland Islands, Nov., Dec.                                   | Antarctic Exped.          |
| u. ♀ ad.; v. Juv. sk.            | Berkeley Sound, East Falklands, Dec.                           | Antarctic Exped.          |

### 3. *Nycticorax cyanocephalus*.

*Ardea cyanocephala*, *Molina*, *Saggio St. Chili*, p. 260 (1786).

*Ardea nycticorax* (*nec Linn.*), *Kittl. Kupf. Vog.* pt. 3, p. 26, Taf. 35 fig. 1 (1838).

*Nycticorax americanus* (*nec Bp.*), *Gould in Darwin's Voy. 'Beagle,' Birds*, p. 128 (1841: Valparaiso).

*Nycticorax cyanocephalus*, *Fraser, P. Z. S.* 1843, p. 116 (Chili).

*Nycticorax gardeni* (pt.), *Gray, List Grall. Brit. Mus.* p. 85 (1844).

*Nycticorax nævius* (*nec Bodd.*), *Gay, Faun. Chil., Zool. i.* p. 412 (1847).

*Nycticorax obscurus*, *Licht. Nomencl. Av. Mus. Berol.* p. 90 (1854: Chili); *Bp. Consp. Av.* ii. p. 141 (1855); *id. Compt. Rend.* xl. p. 723 (1855); *Scl. P. Z. S.* 1867, pp. 334, 339 (Chili); *Scl. & Salv. Ibis*, 1868, p. 189 (Oazy Harbour, Str. of Magellan); *Reichen. J. f. O.* 1877, p. 238; *Scl. & Salv. P. Z. S.* 1878, p. 436 (Tom Harbour, Puerto Bueno); *Sharpe, P. Z. S.* 1881, p. 12 (Cockle Cove).

*Ardea obscura*, *Schl. Mus. Pays-Bas, Ardeæ*, p. 59 (1863).

*Nyctiardea obscura* (pt.), *Gray, Hand-l. B.* iii. p. 33, no. 10176 (1871).

*Adult male.* Similar to *N. nycticorax*, but larger and everywhere darker, the wings dark slaty brown; the sides of the face, neck, and entire under surface of body sooty-grey; no white on the forehead, and only a sooty-brown streak in front of the eye: "bill horn-colour; feet dark grey; iris orange" (*Dr. Coppinger*). Total length about 24 inches, culmen 3, wing 11·3, tail 4·8, tarsus 3·2.

*Adult female.* Similar to the male: "bill dark horn-colour; feet dark grey; iris orange" (*Coppinger*). Total length about 24 inches, culmen 2·8, wing 12·8, tail 5, tarsus 3·3.

*Young.* Similar to the young of *N. nycticorax*, but everywhere

more coarsely spotted with ochreous above; beneath reddish ochre, broadly streaked with black.

*Hub.* From Chili south to the Straits of Magellan.

|                         |                                                                     |                           |
|-------------------------|---------------------------------------------------------------------|---------------------------|
| a. ♂ ad. sk.            | Frutillar, near Lake Llanquehuel, Chili, Dec. 6.                    | Berkeley James Coll.      |
| b. ♂ juv. sk.           | Rio Conta, Chili, Jan. 13.                                          | Berkeley James Coll.      |
| c. Juv. sk.             | Straits of Magellan.                                                | The Admiralty [P.].       |
| d. ♂ juv.; e. ♀ ad. sk. | Cockle Cove, Straits of Magellan, Feb. 12 ( <i>Dr. Coppinger</i> ). | Voy. H.M.S. 'Alert.'      |
| f. Juv. sk.             | Neesham Cove, Trinidad Channel, Feb. 26 ( <i>Dr. Coppinger</i> ).   | Voy. H.M.S. 'Alert.'      |
| g. ♀ juv. sk.           | Tom Harbour, Messier Channel.                                       | Voy. H.M.S. 'Challenger.' |
| h. ♀ juv. sk.           | Puerto Bueno, Jan.                                                  | Voy. H.M.S. 'Challenger.' |

#### 4. *Nycticorax leuconotus*.

*Ardea leuconotus*, *Wagl. Syst. Ar.*, *Ardea*, p. 189, sp. 33 (1827);

*Finsch & Hartl. Vög. Ostaf.* p. 713 (1870); *Heugl. Orn. N.O.-Afr.* ii. Abth. i. p. 1088 (1873: Blue and White Niles: Fazogloa).

*Ardea cucullata*, *Wagl. Isis*, 1829, p. 661; *Schl. Mus. Pays-Bas, Ardeæ*, p. 60 (1863: Gold Coast).

*Nyctiardea leuconota*, *Sicains. Classif. B.* ii. p. 355 (1837); *Gray, Hand-l. B.* iii. p. 33, no. 10178 (1871).

*Nycticorax leuconotus*, *Gray, Gen. B.* iii. p. 558 (1847); *Ayres, Ibis*, 1885, p. 349 (Hex river, breeding); *Cab. in Von der Decken's Reis.* iii. p. 50, Taf. xviii. (1870); *Reichen. J.f. O.* 1877, p. 12 (Loango), p. 239; *Bocage, Orn. Angola*, p. 450 (1881: Humbe); *Sharpe, ed. Layard's B. S. Afr.* p. 724 (1884: Kleinmont).

*Nycticorax cucullatus*, *Gray, Gen. B.* iii. p. 558 (1847); *Licht. Nomencl. Av. Mus. Berol.* p. 90 (1854: Senegal); *Hartl. Orn. West-Afr.* p. 225 (1857: Senegal: Rio Boutry); *Scl. P. Z. S.* 1867, p. 687 (West Africa).

*Ardea ocularia*, *Müller, Naum.* 1851, Heft iv. p. 29 (Senaar).

*Calherodius cucullatus*, *Bp. Consp. Av.* ii. p. 139 (1855); *id. Compt. Rend.* xl. p. 723 (1855); *Layard, Ibis*, 1870, p. 443 (Kleinmont river-mouth).

*Buphus leuconotus*, *Heugl. Syst. Uebers.* p. 59 (1856: Blue Nile).

*Adult.* General colour above black, the long scapular plumes white or pure white along the inner webs, continuous with a large white patch on the upper back; lower back, rump, upper tail-coverts, wings, and tail dusky slate-colour, with a slight greenish shade, the lesser wing-coverts washed with rufous brown; crown of head crested, greenish, with elongated nape-plumes; lores white, extending above the eye, as also a small patch just below the latter; cheeks, ear-coverts, and sides of face black; upper throat white, lower throat and neck all round bright orange-chestnut, with a line of black feathers extending down the hind-neck and joining the black of the upper mantle; centre of lower throat and fore-neck, as well as the centre of the breast, composed of dusky-brown feathers, white

on the outer web, producing a streaked appearance, which becomes less distinct on the abdomen and under tail-coverts, which are whiter; sides of body, flanks, and thighs, as well as the under wing-coverts and axillaries, vinaceous chestnut: "bill blackish, the base of the mandible yellow; lores and orbits bare, greenish yellow; feet orange; iris fiery yellow" (*Von Heuglin*). Total length about 20 inches, culmen 2·6, wing 10·2, tail 4·1, tarsus 2·8.

*Adult female.* Similar to the male, but much lighter and paler: "bill dark horn, lower mandible lightest; tarsi and feet yellow" (*IV. Lucas*). Total length about 19 inches, culmen 2·6, wing 10·5, tail 4·3, tarsus 2·9.

The adult male described is from the Gold Coast, and none of the other specimens have the line of black feathers down the hinder neck: the specimen in question seems to be in every way adult.

*Hab.* Confined to Africa.

|              |                                                                 |               |
|--------------|-----------------------------------------------------------------|---------------|
| a. Ad. st.   | Africa.                                                         | Old Coll.     |
| b. Ad. st.   | West Africa.                                                    | Purchased.    |
| c. ♂ ad. sk. | Gold Coast.                                                     | Shelley Coll. |
| d. ♀ ad. sk. | Hex River, Rustenberg Distr.,<br>Transvaal ( <i>W. Lucas</i> ). | Gurney Coll.  |

### 5. *Nycticorax caledonicus*.

Caledonian Night-Heron, *Cook's Voy.* ii. pl. 50, p. 111 (1777); *Lath. Gen. Syn.* iii. pt. 1, p. 55 (1785).

*Ardea caledonica*, *Gm. Syst. Nat.* i. p. 626 (1788); *Lath. Ind. Orn.* ii. p. 679 (1790: New Caledonia); *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 436 (1817); *Less. Traité*, p. 571 (1831); *Schl. Mus. Pays-Bas*, *Ardeæ*, p. 59 (1863: Hunter R., Australia; Timor; Morotai; Halmahera; Makassar; Tondano); *id. Nederl. Tijdsch. Dierk.* iii. p. 348 (1868: Aru); *Rosenb. Malay. Arch.* pp. 373, 407, 563 (1878-79: Ternate).

*Ardea maculata*, *Lath. Gen. Syn. Suppl.* ii. p. lxiv (1801); *Strickl. Ann. N. H.* xi. p. 338 (1843).

*Ardea novæ hollandiæ*, *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 436 (1817); *Pucher. Rev. et Mag. de Zool.* 1851, p. 565; *Hartl. J. f. O.* 1855, p. 421.

*Ardea australia*, *Vieill. Enc. Méth.* iii. p. 1130 (1823); *Pucher. Rev. et Mag. de Zool.* 1851, p. 566, note.

*Nycticorax caledonicus*, *Steph. in Shaw's Gen. Zool.* xi. p. 613 (1819); *Gray, List Grall. Brit. Mus.* p. 85 (1844); *id. Gen. B.* iii. p. 553 (1847); *Gould, B. Austr.* vi. pl. 63 (1848); *Reichenb. Vög. Neuhol.* pt. ii. p. 33, sp. 322 (1850); *id. Grall.* tab. 155. figs. 2389-90 (1851); *Macgill. Voy. Rattlem.* ii. p. 358 (1852: N.E. Australia; Torres Straits); *Bp. Conspect. Av.* ii. p. 139 (1855); *Gray, P. Z. S.* 1858, p. 197; *id. Cat. Mamm. & B. New Guin.* p. 62 (1859); *id. Cat. B. Trop. Isl. Pacif. Ocean*, p. 49 (1859); *id. P. Z. S.* 1859, p. 166; *id. P. Z. S.* 1860, p. 364 (Halmahera); *Verr. et Des Murs, Rev. et Mag. de Zool.* 1860, p. 439 (New Caledonia); *Wall. P. Z. S.* 1863, p. 35 (Bouru); *Rosenb. Tijdschr. Nederl. Ind.* 1863, p. 253 (Amboina; Timor); *id. J. f. O.* 1864, p. 136 (New Guinea); *Finsch, Neu-Guinea*, p. 183 (1865: Batchian); *Gould, Handb. B. Austr.* ii. p. 311 (1865); *Ramsay, Ibis*, 1866, p. 336 (Port Denison); *Rosenb. Reis naar Zuidoostereil.* p. 53 (1867: Aru);

- Hartl. & Finsch, P. Z. S.* 1868, p. 118 (Pelew Is.); *Marie, Actes Soc. Linn. Bordeaux*, xxvii. p. 328 (1870: New Caledonia); *Wald. Trans. Z. S.* viii. p. 100 (1872: Celebes); *Buller, B. New Zeal.* p. 233 (1873); *Hutton, Ibis*, 1874, p. 41; *Buller, t. c.* p. 119; *Rosenb. Reistocht. Geelvinksb.* p. 8 (1875: Ternate); *Sharpe, Voy. Ereb. & Terr., Birds*, App. p. 31 (1875); *Salvad. Ann. Mus. Genov.* vii. p. 681 (1875: Celebes); *id. op. cit.* viii. p. 384 (1876: Bouru); *Cab. & Reichen. J. f. O.* 1876, p. 327 (Dana Isl.); *Brüggem. Abhandl. nat. Ver. Bremen*, v. p. 98 (1876: Celebes); *Masters, Proc. Linn. Soc. N. S. W.* i. p. 61 (1877: Darnley Isl.); *Ramsay, t. c.* p. 192; *Layard, Ibis*, 1877, p. 363 (New Caledonia); *Ramsay, Proc. Linn. Soc. N. S. W.* ii. p. 199 (1877); *Reichen. J. f. O.* 1877, p. 238; *Ramsay, Proc. Linn. Soc. N. S. W.* iii. p. 116 (1878: Katau), p. 300 (1879: Port Moresby); *D'Albert. Ann. Mus. Genov.* x. p. 20 (1877: Fly River); *Salvad. t. c.* p. 166 (Kapaor); *Ramsay, P. Z. S.* 1877, p. 342 (Queensland); *Scl. t. c.* p. 555 (Admiralty Is.); *D'Alb. & Salvad. Ann. Mus. Genov.* xiv. p. 133 (1879: Katau); *Salvad. t. c.* p. 668 (Kei Isl.); *Meyer, Ibis*, 1879, p. 143 (Menado; Limbotto); *Scl. Voy. 'Challenger,' ii. Birds*, p. 30 (1881: Admiralty Is.); *Meyer, Verh. z.-b. Ges. Wien*, 1881, p. 771 (Luang); *Blas. & Nehrck. op. cit.* 1882, p. 431 (Amboina); *Nicholson, Ibis*, 1882, p. 469 (Cocos; Keeling Isl.); *E. L. & E. L. C. Layard, t. c.* pp. 531, 544 (New Caledonia); *Salvad. Ann. Mus. Genov.* xviii. p. 336 (1882); *id. Orn. Pap.* iii. p. 372 (1882: Bouru; Amboyna; Andai; Kei Bandan; Great Kei; Aru; Salawatti; Waigiou); *Blasius, J. f. O.* 1883, p. 133 (Celebes); *Meyer, Sitz. ges. Isis, Dresden*, Abth. i. 1884, p. 57 (Timor Laut); *Forbes, P. Z. S.* 1884, p. 434 (*l. c.*); *Pleske, Bull. Acad. St. Pétersb.* xxix. p. 538 (1884: Ternate); *Sharpe, Voy. 'Alert,'* p. 28 (1884: Thursday Isl.); *Nehrck. J. f. O.* 1885, p. 35 (Waigiou); *Guillem. P. Z. S.* 1885, p. 665 (Salawatti); *Ramsay, Tab. List Austr. B.* p. 21 (1888); *id. Proc. Linn. Soc. N. S. W.* (2) ii. p. 172 (1888: Derby); *Buller, B. New Zeal.* 2nd ed. ii. p. 139 (1888); *North, Nests and Eggs. Austr. B.* p. 320 (1889); *Salvad. Ann. Mus. Genov.* (2) x. p. 827 (1891: Killerton Isl.); *id. Agg. Orn. Pap.* iii. p. 208 (1891).
- Ardea sparmani*, *Wagl. Syst. Av.*, *Ardea*, p. 188, sp. 32 (1827).
- Ardea ferruginea* (*nec Gm.*), *Forst. Icon. ined.* pl. 111; *id. Descr. Anim.* p. 274 (1844).
- Nycticorax australasie*, *Gray, Gen. B.* iii. p. 558 (1847).
- Calherodius caledonicus*, *Bp. Compt. Rend.* xl. p. 723 (1855).
- Nyctiardea caledonica*, *Gray, Hand-l. B.* iii. p. 33, no. 10172 (1871).
- Nyctiardea manillensis*, *pt.*, *Gray, Hand-l. B.* iii. p. 33, no. 10173 (1871).
- Nycticorax manillensis* (*nec Vig.*), *Hartl. & Finsch, P. Z. S.* 1872, pp. 89, 117 (Pelew Islands).

**Adult male.** General colour above pale cinnamon or light chestnut; the wing-coverts like the back; quills a trifle more chestnut, with a dusky shade along the inner web of the first two primaries; tail-feathers like the back, with whitish bases to the inner webs; crown of head, largely crested on the nape, black, with two long white nuchal plumes; a line of white extending from the base of the bill to behind the eye, forming a distinct white eyebrow; sides of face and ear-coverts, as well as the sides of the neck and hinder neck, pale cinnamon, extending down the sides of the fore-neck; the feathers below the eye and fore part of cheeks whiter; entire under



surface of body pure white, including the under wing-coverts and axillaries; quills below pale cinnamon, white towards the base of the inner web: "bill in some specimens black, slightly tipped with yellow, in others black with a streak of greenish yellow along the lower mandible, and a wash of the same hue along the lower edge of the upper one; feet jonquil-yellow, claws black; iris orange: bare space surrounding the eye greenish yellow" (*J. Gould*). Total length 19.5 inches, culmen 3, wing 11.6, tail 3.6, tarsus 3.25.

*Adult female.* Similar to the male. Total length 18.5 inches, culmen 2.9, wing 10.8, tail 3.9, tarsus 3.25.

*Young.* Different from the adult, being everywhere thickly streaked and spotted with buffy white; crown of head and neck streaked, the back, scapulars, and wing-coverts with large ovate or triangular spots; quills dusky blackish, spotted with white at the ends and irregularly shaded with rufous; tail also rufous, tipped with white and irregularly barred or mottled with dusky blackish; sides of face and under surface of body white, everywhere streaked with dusky blackish; a distinct white stripe along the cheeks; throat and abdomen white; under wing-coverts and axillaries streaked with blackish like the breast: "iris yellow" (*J. Gould*).

Young birds after the first moult are much duller than the old ones, being perceptibly browner on the back, and everywhere duller in colour, with the ends of the quills dusky and the inner secondaries mottled with dusky.

The two specimens from the Pelew Islands are smaller than the majority of the Australian examples, and are more dusky in tint, the inner web of the quills being dull chestnut. I do not see, however, that they can be specifically separated from the typical bird.

*Hab.* Australia, to the Admiralty and Pelew Islands, and north to Celebes.

|                            |                                                      |                            |
|----------------------------|------------------------------------------------------|----------------------------|
| a. Ad. st.                 | Australia.                                           | A. Thomson, Esq.<br>[P.]   |
| b. Ad. sk.                 | Australia.                                           | Rev. A. Strong [P.]        |
| c, d. Ad. et juv.<br>sk.   | New South Wales.                                     | Australian Museum<br>[P.]  |
| e. ♂ ad. sk.               | New South Wales.                                     | Hume Coll.                 |
| f. Juv. sk.                | New South Wales.                                     | Gould Coll.                |
| g, h. Juv. sk.             | South Australia.                                     | Capt. Sturt [P.]           |
| i, k. ♂ ad. et juv.<br>sk. | South Australia.                                     | Sir George Grey<br>[P.]    |
| l. Ad. sk.                 | West Australia.                                      | Sir George Grey<br>[P.]    |
| m. Imm. sk.                | Derby, N.W. Australia ( <i>T. H. Bowyer Bower</i> ). | Capt. Bowyer Bower<br>[P.] |
| n. Ad. st.                 | Port Essington.                                      | J. B. Jukes, Esq.<br>[P.]  |
| o. Ad. sk.                 | Queensland ( <i>J. T. Cockerell</i> ).               | Tweeddale Coll.            |
| p. Ad. sk.                 | Port Denison, Dec. 20 ( <i>E. P. Ramsay</i> ).       | Hume Coll.                 |
| q. ♂ ad. sk.               | Moreton Bay ( <i>F. Strange</i> ).                   | E. Hargitt, Esq. [P.]      |

|                              |                                                                   |                           |
|------------------------------|-------------------------------------------------------------------|---------------------------|
| r. ♂ ad. sk.                 | Thursday Island, Torres Straits, June 21 ( <i>Dr. Copinger</i> ). | Voy. H.M.S. 'Alert.'      |
| s, t. ♂ ♀ ad.; u. ♂ juv. sk. | Admiralty Islands.                                                | Voy. H.M.S. 'Challenger.' |
| v, w. Ad. sk.                | Pelew Islands ( <i>Cohen</i> ).                                   | Tweeddale Coll.           |
| x, y. Ad. et juv. sk.        | Celebes.                                                          | Tweeddale Coll.           |

Subsp. *α*. *Nycticorax crassirostris*.

*Ardea caledonica* (*nec Gm.*), *Kittlitz, Kupf. Vög.* iii. p. 27, pl. 35. fig. 2 (1833: Bonin Is.).

*Nycticorax crassirostris*, *Vigors, Voy. 'Blossom,' Zool.* p. 27 (1839: Bonin Is.); *Gray, Gen. B.* iii. p. 558 (1847); *Bp. Consp. Av.* ii. p. 140 (1855); *Seebohm, P. Z. S.* 1889, p. 586 (Bonin Is.); *id. Ibis*, 1890, pp. 106, 108 (Nakondo-Shima; Parry Is., June); *id. B. Jap. Emp.* p. 222 (1890).

*Calherodius crassirostris*, *Bp. Compt. Rend.* xl. p. 723 (1855).

*Nyctiardea crassirostris*, *Gray, Hand-l. B.* iii. p. 33, no. 10174 (1871).

*Adult* (type of species). Similar to *N. caledonicus*, and only differing in its stouter bill: "bill black, greenish yellow at base; tarsi light yellow, with greenish scales in front; iris light yellow" (*P. A. Holst*). Total length about 22 inches, culmen 3.3, wing 10.5, tail 4.2, tarsus 4.

*Hab.* Bonin Islands.

|            |                |                                   |
|------------|----------------|-----------------------------------|
| α. Ad. sk. | Bonin Islands. | Gould Coll.<br>(Type of species.) |
|------------|----------------|-----------------------------------|

6. *Nycticorax mandibularis*.

*Nycticorax manillensis*, pt., *Bp. Consp. Av.* ii. p. 140 (1855); *Gray, List B. Trop. Isl.* p. 49 (1859: Solomon Islands); *Scl. P. Z. S.* 1869, p. 119 (Solomon Is.); *Ramsay, Proc. Linn. Soc. N. S. W.* vii. p. 39 (1882: Ugi); *Tristr. Ibis*, 1882, p. 140 (Solomon Is.).

*Nyctiardea manillensis*, pt., *Gray, Hand-l. B.* iii. p. 33, no. 10173 (1871).

*Nycticorax caledonicus* (*nec Gm.*), *Salvad. Orn. Pap.* iii. p. 372 (1882); *Ogilvie-Grant, P. Z. S.* 1887, p. 338 (Fauro, Solomon Is.).

*Nycticorax mandibularis*, *Ogilvie-Grant, P. Z. S.* 1888, p. 203 (Solomon Is.); *Salvad. Agg. Orn. Pap.* iii. p. 208 (1891).

*Adult female* (type of species). Similar to *N. manillensis*, and, like that species, not having a white eyebrow, but differing from it in having a pure white throat like *N. caledonicus*: "bill black, base of lower mandible and skin round the eye yellow; legs yellow; iris yellow" (*C. M. Woodford*).

*Hab.* Solomon Islands, New Britain and Duke of York Islands.

|                    |                                                    |                                                 |
|--------------------|----------------------------------------------------|-------------------------------------------------|
| α. ♀ ad. sk.       | Aola, Guadalcanar, Solomon Islands, May.           | C. M. Woodford, Esq.<br>[C.] (Type of species.) |
| β, c. ♂ ♀ juv. sk. | Aola, Guadalcanar, April.                          | C. M. Woodford, Esq.<br>[C.]                    |
| d. Ad. sk.         | Duke of York Island.                               | Rev. G. Brown [C.]                              |
| e. Ad. sk.         | Duke of York Island, Feb. ( <i>Kleinschmidt</i> ). | Dr. R. B. Sharpe<br>[P.]                        |
| f. Juv. sk.        | Kabahadai, New Britain, Feb.                       | Rev. G. Brown [C.]                              |

7. *Nycticorax manillensis*.

*Nycticorax manillensis*, *Vigors, P. Z. S.* 1831, p. 98 (Manila); *Gray, List Grall. Brit. Mus.* p. 86 (1844: Mindanao); *id. Gen. B.* iii. p. 558 (1847); *Fraser, Zool. Typ.* pl. 66 (1850); *Bp. Consp. Av.* ii. p. 140 (1855); *Schl. Mus. Pays-Bas, Ardeæ*, p. 60 (1863: Luzon); *Martens, J. f. O.* 1866, p. 28 (Samar); *Wald. Trans. Z. S.* ix. p. 238 (1875: Manila); *Tweedd. P. Z. S.* 1877, p. 769 (Cebu); *id. P. Z. S.* 1878, p. 288 (Dumaguete), p. 345 (Amparo); *id. P. Z. S.* 1879, p. 73 (Basilan); *Steere, List Mamm. & Birds Philipp. Exped.* p. 27 (1890: Mindanao; Siquijor; Marinduque); *Sharpe, Ibis*, 1894, p. 541 (Lower Padas River); *Bourne & Worcester, Occ. Papers Minnesota Acad.* i. no. 1, p. 32 (1894: Samar; Tawi Tawi, Tabias, Sibuyan, Panay, Masbate, Siquijor).

*Ardea caledonica* (*nec Gm.*), *Meyen, Nov. Acta Acad. Cæs. Leop.-Nat. Cur.* 1834, p. 103.

*Calherodius manillensis*, *Bp. Compt. Rend.* xl. p. 723 (1855).

*Nyctiardea manillensis*, *Gray, Hand-l. B.* iii. p. 33, no. 10173 (1871).

**Adult male.** Similar to *N. caledonicus*, but darker and very much richer in colour, being of a deep maroon above; crown of head and crest-feathers, including the long nuchal plumes, greenish black, extending down the hind-neck on to the mantle; no white eyebrow; under surface of body white, but the throat pervaded with chestnut; the whole of the sides of the face and sides of neck chestnut, extending on to the sides of the breast; the under wing-coverts, axillaries, and thighs for the most part chestnut, but with a good deal of white in the centre of the feathers: "bill black; feet pale ochreous white, brown in front and the upper part of the toes; orbital skin yellowish green; iris golden yellow" (*A. H. Everett*). Total length 25 inches, culmen 2.75, wing 12.5, tail 4.6, tarsus 3.1.

**Adult female.** Similar to the male in colour. Total length 22 inches, culmen 3, wing 12.3, tail 4.85, tarsus 3.2.

**Young.** Similar to the young of *N. caledonicus*, but much more rufous, the wings conspicuously chestnut, the spots and streaks on the upper surface deep rufous or light chestnut, and the breast very broadly streaked with black: "bill brown, lower mandible dirty yellowish; legs light greenish yellow, claws grey; iris golden yellow" (*A. H. Everett*).

**Hab.** Philippine Islands, N. Borneo.

|                            |                                                     |                                   |
|----------------------------|-----------------------------------------------------|-----------------------------------|
| a, b. Ad. et juv. sk.      | Philippine Islands ( <i>C. Cross</i> ).             | <i>J. H. Gurney, Esq.</i><br>[P.] |
| c. Ad. st.                 | Island of Luzon.                                    | Cuming Coll.                      |
| d. ♀ imm. sk.              | Marinduque, May 22 ( <i>E. L. Moseley</i> ).        | Steere Expedition.                |
| e. ♀ juv. sk.              | Concepcion, Panay, Jan. 9 ( <i>E. L. Moseley</i> ). | Steere Expedition.                |
| f, g, h. ♂ ad. et juv. sk. | Cebu, May ( <i>A. H. Everett</i> ).                 | Tweeddale Coll.                   |
| i. Juv. sk.                | Mindanao.                                           | Cuming Coll.                      |
| k. Juv. sk.                | Mindanao ( <i>D. C. Worcester</i> ).                | Steere Expedition.                |
| l. ♂ juv. sk.              | Dumaguete, Aug. ( <i>A. H. Everett</i> ).           | Tweeddale Coll.                   |

|                    |                                                        |                          |
|--------------------|--------------------------------------------------------|--------------------------|
| m. ♂ ad. sk.       | Basilan, May ( <i>A. H. Everett</i> ).                 | Tweeddale Coll.          |
| n. ♂ ad. sk.       | S. Leyte, May ( <i>A. H. Everett</i> ).                | Tweeddale Coll.          |
| o. ♀ ad. sk.       | Amparo, S. Leyte, July ( <i>A. H. Everett</i> ).       | Tweeddale Coll.          |
| p. ♀ juv. sk.      | Siquijor, Feb. 24 ( <i>D. C. Worcester</i> ).          | Steere Expedition.       |
| q, r. ♂ ♀ imm. sk. | Lower Padas River, N. Borneo, May ( <i>A. H. E.</i> ). | A. H. Everett, Esq. [P.] |
| s. ♂ ad. sk.       | Labuan, N.E. monsoon.                                  | A. H. Everett, Esq. [P.] |

8. *Nycticorax minahassæ*.

*Nycticorax minahassæ*, *Meyer & Wiegman. J. f. O.* 1894, p. 115.

*Adult.* Similar to *N. manillensis*, but grey above, and with the inner aspect of the quills mouse-brown.

*Hab.* N. Celebes.

## 17. CANCROMA.

|                                                              |                         |
|--------------------------------------------------------------|-------------------------|
| Cochlearius, <i>Briss. Orn.</i> v. p. 506 (1760).....        | Type.<br>C. cochlearia. |
| Cancroma, <i>Linn. Syst. Nat.</i> i. p. 233 (1766).....      | C. cochlearia.          |
| Cymbops, <i>Wagler, Syst. Av.</i> , Cymbops, p. 143 (1827) . | C. cochlearia.          |

*Range.* Confined to Central and Southern America.

*Key to the Species.*

- a. Throat and chest white..... *cochlearia*, p. 163.  
b. Throat and chest vinous or light tawny ..... *zeledoni*, p. 165.

1. *Cancroma cochlearia*.

La Cuillière, *Briss. Orn.* v. p. 506 (1760).

La Cuillière brune, *Briss. t. c.* p. 509.

*Cancroma cochlearia*, *Linn. Syst. Nat.* i. p. 233 (1766); *Neuwied, Beitr. Naturg. Bras.* iv. p. 660 (1832); *Vieill. Gal. Ois.* ii. p. 129, pl. 249 (1834); *Gray, Gen. B.* iii. p. 558, pl. 150. fig. 5 (1847); *Cab. in Schomb. Reis. Guian.* iii. p. 755 (1848); *Bp. Consp. Av.* ii. p. 142 (1855); *Burm. Th. Bras.* iii. p. 404 (1856); *Schl. Mus. Pays-Bas, Ardes.* p. 62 (1863: Surinam); *Léot. Ois. Trinid.* p. 436 (1866); *Finsch, P. Z. S.* 1870, p. 589 (Trinidad); *Gray, Hand-l. B.* iii. p. 34, no. 10182 (1871); *Pelz. Orn. Bras.* pp. 303, 456 (1871: Cuyaba, May-July; Engenho do Pari, June; Rio do Cabacal, Aug.; Caiçara, Oct.; Matogrosso, Nov.; Borça, Aug. Rio Branco, June; Barra do Rio Negro, Oct.); *Scl. & Salv. Nomencl. Av. Neotrop.* p. 126, pt. (1873); *id. P. Z. S.* 1873, p. 305 (Cashiboya); *id. P. Z. S.* 1879, p. 542 (Remedios); *Tacz. Orn. Pérou*, iii. p. 409 (1886: Cashiboya); *Salvin, Ibis*, 1886, p. 171 (British Guiana); *Chapm. Bull. Amer. Mus.* vi. p. 82 (1894: Trinidad).

*Cancroma cancropaga*, *Linn. Syst. Nat.* i. p. 233 (1766).

The Boatbill, *Brown, Ill. Zool.* p. 92, pl. 36 (1776).

Savacou de Cayenne, *Daubent. Pl. Enl.* viii. pl. 38.

Le Savakou hupé de Cayenne, *Daubent. Pl. Enl.* viii. pl. 869.

Crested Boatbill, *Lath. Gen. Syn.* iii. pt. 1, p. 26, pl. lxxvi. (1785).

Spotted Boatbill, *Lath. t. c.* p. 27.

Brown Boatbill, *Lath. t. c.* p. 28.

*Cymbops cochlearia*, *Wagl. Syst. Av.* p. 144 (1827).

*Nycticorax canerophagus*, *Reichen. J. f. O.* 1877, p. 236 (Brazil).

*Cochlearius cochlearius*, *Stejn. Stand. Nat. Hist.* iv. p. 178 (1895).

*Cochlearius canerophagus*, *Heins & Reichen. Nomencl. Mus. Hein.* p. 310 (1890).

*Adult.* General colour above delicate lavender-grey, the upper mantle with a broad band of black, tinged with maroon, extending a little way down the sides of the mantle; the wing-coverts grey like the back, but inclining to hoary grey on the greater series; quills hoary grey or whitish, dusted with slaty-grey towards their ends; lower back, rump, upper tail-coverts, and tail hoary grey; crown of head and nuchal crest blue-black; forehead white to above the eye; lores bare; sides of face, throat, and chest white, with a delicate shade of lavender-grey on the sides of the neck and sides of chest; breast, abdomen, and under tail-coverts dark cinnamon-rufous; sides of body and flanks black, as also the axillaries and inner lower wing-coverts, the outer ones white like the edge of the wing; thighs white, washed with bluish grey: "iris dark, with a small greyish-brown ring on the outer side: throat-patch dull yellow; bare space in front of the eye dark brown; eyelids greenish yellow; upper mandible dark brown, blackish on the culmen, and somewhat yellowish on the nasal grooves; edges of upper mandible and entire lower mandible clear yellow, somewhat duller brown near the sides of the base; feet dull or dirty yellow, brownish on the soles, somewhat greenish on the sides of the tarsus; claws yellowish flesh-colour" (*Newied*). Total length 16 inches, culmen 2.65, wing 10.8, tail 4.4, tarsus 2.8.

*Adult female.* Similar to the male in plumage. Total length 19 inches, culmen 2.4, wing 11.6, tail 5.4, tarsus 3.

*Young.* Different from the adults, and cinnamon-rufous above, darker on the back, and somewhat lighter on the wing-coverts; a slight shade of grey on the greater coverts and inner secondaries; lower back, rump, and upper tail-coverts dusky grey washed with rufous; tail-feathers grey, narrowly fringed and washed with rufous; crown of head black, but no nuchal crest; sides of face and under surface of body whitish, washed with grey on the face and with rufous on the sides of the neck and chest; the black patches on the flanks of the adult replaced by striped feathers, ashy, washed with rufous and having longitudinal white centres; axillaries similarly striped.

Another young bird from Sarayacu has the primary-coverts and quills tipped with white, as in the rufous Night Herons.

*Hab.* South America from Southern Brazil, throughout Amazonia to Guiana, Colombia, and Ecuador.

|                       |                                                          |                           |
|-----------------------|----------------------------------------------------------|---------------------------|
| a. Ad. sk.            | Brazil.                                                  | Riocour Coll.             |
| b. ♂ ad.; c. Juv. sk. | Rio de Janeiro.                                          | Alex. Fry, Esq. [P.].     |
| d. ♀ ad. sk.          | Engenho do Pari, Brazil, Jan. 22 ( <i>J. Natterer</i> ). | Salvin-Godman Coll.       |
| e. Ad. sk.            | Cayenne.                                                 | H. O. Rothery, Esq. [P.]. |

|                                   |                                                               |                              |
|-----------------------------------|---------------------------------------------------------------|------------------------------|
| <i>f.</i> Ad. sk.                 | Cayenne.                                                      | J. E. Harting, Esq.<br>[P.]. |
| <i>g.</i> ♂ ad. sk.               | R. Takutu, British Guiana,<br>March 16 ( <i>H. Whitely</i> ). | Salvin-Godman Coll.          |
| <i>h.</i> ♂ ad. sk.               | R. Carimang, March 30 ( <i>H. W.</i> ).                       | Salvin-Godman Coll.          |
| <i>i.</i> ♂ imm. sk.              | Remedios, U.S. Colombia ( <i>T. K. Salmon</i> ).              | Salvin-Godman Coll.          |
| <i>k.</i> Ad.; <i>l.</i> Juv. sk. | Sarayacu, Ecuador ( <i>C. Buckley</i> ).                      | Salvin Godman Coll.          |

2. *Cancroma zeledoni*.

*Cancroma cochlearia* (*nec Linn.*), *Scl. & Salv. Ibis*, 1859, p. 227; *G. C. Taylor, Ibis*, 1860, p. 313 (Honduras); *Salvin, Ibis*, 1864, p. 387 (British Honduras); *Scl. & Salv. P. Z. S.* 1864, p. 371 (Panama); *Murie, Trans. Zool. Soc.* vii. p. 467 (1867); *Salv. P. Z. S.* 1870, p. 218 (Mina de Chorchá, Veragua); *Scl. & Salv. Nomencl. Av. Neotr.* p. 126, pt. (1873); *Boucard, P. Z. S.* 1883, p. 458 (Rio Lagartos); *Salv. Ibis*, 1885, p. 186, 1889, p. 376 (Cozumel).

*Canchroma zeledoni*, *Ridgw. Proc. U.S. Nat. Mus.* viii. p. 93 (1885).  
*Cochlearius zeledoni*, *Stejn. Stand. Nat. Hist.* iv. p. 178 (1885);  
*Ferrari-Perez, Proc. U.S. Nat. Mus.* ix. p. 171 (1886: Vera Cruz);  
*Heine & Reichen. Nomencl. Mus. Hein.* p. 310 (1890); *Richmond, Proc. U.S. Nat. Mus.* xvi. p. 527 (1893: Rio Frio, Costa Rica; Escondido R., Nicaragua).

**Adult.** Similar to *C. cochlearia*, but distinguished by the colour of the throat and breast, which are pale vinous or light tawny. Total length 18 inches, culmen 3.3, wing 11.3, tail 4.2, tarsus 3.3.

Of the distinctness of the Central American Boatbill, there can, I think, be no question. In shade of grey there is much variation in a series, and I inclined at first to the opinion that the birds from certain localities were darker than those from other countries; but I find that light and dark-coloured specimens have been procured in the same districts, and it is possible, therefore, that the darkness of the grey tint may be a sign of immaturity or non-breeding plumage.

**Young.** Never so rufous as the young of *C. cochlearia*, but otherwise similar, and having the flanks streaked with white.

**Hab.** Central America from Mexico to Panama.

|                                      |                                                              |                     |
|--------------------------------------|--------------------------------------------------------------|---------------------|
| <i>a.</i> ♂ juv. sk.                 | Tampico, Mexico, June ( <i>W. B. Richardson</i> ).           | Salvin-Godman Coll. |
| <i>b, c.</i> Ad.; <i>d.</i> Imm. sk. | La Antigua, Vera Cruz, Mexico, Sept. ( <i>M. Trujillo</i> ). | Salvin-Godman Coll. |
| <i>e.</i> Imm. sk.                   | Atoyac, Vera Cruz, May ( <i>D. W. Smith</i> ).               | Salvin-Godman Coll. |
| <i>f.</i> ♂ juv. sk.                 | Place del Rio, Jalapa, July ( <i>Ferrari-Perez</i> ).        | Salvin-Godman Coll. |
| <i>g.</i> ♂ ad. sk.                  | Santa Ana, Jalapa, Nov. ( <i>Ferrari-Perez</i> ).            | Salvin-Godman Coll. |
| <i>h.</i> ♀ ad. sk.                  | Tehuantepec, March 8 ( <i>W. B. Richardson</i> ).            | Salvin-Godman Coll. |
| <i>i, k.</i> Ad. sk.                 | N. Yucatan, June 10 ( <i>G. F. Gaumer</i> ).                 | Salvin-Godman Coll. |

|                             |                                                               |                     |
|-----------------------------|---------------------------------------------------------------|---------------------|
| <i>l-m</i> . Ad. sk.        | Cozumel Island, Jan. ( <i>G. F. Gaumer</i> ).                 | Salvin-Godman Coll. |
| <i>v</i> . ♀ ad. sk.        | Grassy Key, British Honduras, May 20 ( <i>O. S.</i> ).        | Salvin-Godman Coll. |
| <i>w, x</i> . Ad. sk.       | Las Salinas, Guatemala, March ( <i>O. S.</i> ).               | Salvin-Godman Coll. |
| <i>y, z, a'</i> . Ad. sk.   | Momotombo, Nicaragua, May ( <i>W. B. Richardson</i> ).        | Salvin-Godman Coll. |
| <i>b'</i> . ♂ imm. sk.      | Escondido River, Nicaragua, Oct. 6 ( <i>C. W. Richmond</i> ). | Salvin-Godman Coll. |
| <i>c', d', e' ♀</i> ad. sk. | Mina de Chorchá, Chiriquí, Panama ( <i>E. Arce</i> ).         | Salvin-Godman Coll. |

## 18. GORSACHIUS.

|                                                              |                          |
|--------------------------------------------------------------|--------------------------|
|                                                              | Type.                    |
| <i>Gorsakius</i> , <i>Bp. Consp.</i> ii. p. 138 (1855) ..... | <i>G. goisagi</i> .      |
| <i>Butio</i> , <i>Reichen. J. f. O.</i> 1877, p. 246 .....   | <i>G. melanolophus</i> . |

*Range.* Southern India and Ceylon, Burmese countries to the Malayan peninsula and islands; Japan, Formosa.

*Key to the Species.*

- a*. Head black; axillaries barred with black and white; primaries with a whitish tip..... *melanolophus*, p. 166.  
*b*. Head vinous chestnut; axillaries rufous, barred with black; primaries rufous at the tip, the whitish tip obsolete ..... *goisagi*, p. 169.

1. *Gorsachius melanolophus*.

- Ardea melanolopha*, *Raffles, Tr. Linn. Soc.* xiii. p. 326 (1822: Sumatra); *Blyth, Ibis*, 1865, p. 38 (Malacca, Aracan).  
*Nycticorax limnophilax*, *Temm. Pl. Col.* pl. 581 (1836: Java); *Gray, Gen. B.* iii. p. 558 (1847).  
*Botaurus limnicola*, *Reichenb. Grall.* Taf. 86. fig. 510 (1846).  
*Tigrisoma melanolopha*, *Blyth, Cat. B. Mus. As. Soc. Beng.* p. 281 (1849: Ceylon; Sumatra); *Layard, Ann. Nat. Hist.* xiv. p. 114 (1854: Ceylon).  
*Tigrisoma limnicola*, *Reichenb. Av. Syst. Nat.* p. xvi (1852).  
*Botaurus limnophilax*, *Bp. Consp.* ii. p. 136 (1855); *Salvad. Ucc. Born.* p. 355 (1874); *Reichenow, J. f. O.* 1877, p. 241.  
*Gorsachius typus*, *Pucher.*; *Bp. Consp.* ii. p. 138 (1855); *id. C. R.* xl. p. 723 (1855).  
*Ardea limnophylax*, *Schl. Mus. Pays-Bas, Ardeæ*, p. 55 (1863: Bangka; Java; Philippines); *Rosenb. Malay. Arch.* p. 278 (1878-79: Celebes).  
*Ardea melalophos (lapou)*, *Jerd. B. Ind.* iii. p. 758 (1864).  
*Gorsachius melanolophus*, *Blyth, Ibis*, 1865, p. 38; *id. Ibis*, 1867, p. 173; *Holdsw. P. Z. S.* 1872, p. 478; *Salvad. Ucc. Born.* p. 355 (1874); *Hume, Str. F.* ii. p. 312 (1874: Nicobars); *Walden, Tr. Z. S.* ix. p. 238 (1875); *Sharpe, Ibis*, 1879, p. 271 (Brunei; Lawas River); *Bourd. Str. F.* viii. p. 524 (1879: Travancore); *Hume, Str. F.* viii. p. 71 (Malacca), p. 114 (Cat.); *id. Str. F.* ix. p. 290 (1880); *Legge, B. Ceylon*, p. 1167 (1880).  
*Ardea (Botaurus) philippensis*, *Martens, J. f. O.* 1866, p. 28 (Philippines).



- Nycticorax goisagi* (*nec Temm.*), *Hartl. & Finsch, P. Z. S.* 1868, p. 8 (Pelew Is.).  
*Nycticorax melanolophus*, *Finsch, Journ. Mus. Godeffr.* vii. p. 35 (1875: Pelew Is.).  
*Botaurus melanolophus*, *Reichen. J. f. O.* 1877, p. 246.  
*Butio kutteri*, *Cab. Orn. Centralbl.* no. 20, Oct. 1881, p. 159; *id. J. f. O.* 1881, p. 425 (Philippines); *Reichen. & Schalow, J. f. O.* 1882, p. 115.  
*Butio* (Gorsachius) *kutteri*, *Kutter, J. f. O.* 1882, p. 178, Taf. iii.  
*Gorsachius goisagi* (*nec T.*), *Salvad. Ann. Mus. Genov.* xviii. p. 336 (1882); *id. Orn. Papuasie e delle Molucche*, iii. p. 370 (1882).

*Adult male.* General colour above uniform cinnamon-rufous, the wing-coverts and mantle with a slight ashy shade and with a certain amount of indistinct freckling; bastard-wing feathers black or slightly mottled with rufous and having broad white tips; outer primary-coverts black, broadly tipped with white and rufous at the base; remainder of primary-coverts cinnamon-rufous slightly tipped with white; quills black, externally shaded with grey, broadly tipped with cinnamon-rufous, narrowly fringed with white at the ends; outer primaries with a large white terminal spot; the inner secondaries like the back; upper tail-coverts and tail dark slate-colour, with a slight rufescent tinge at the ends of the inner web; crown of head and long nuchal crest-feathers slaty-grey or black; a narrow line of feathers over the eye vinous cinnamon, broadening out above the ear-coverts and occupying the sides of the crown, sides of neck, and sides of face; chin and centre of throat pale isabelline brown, streaked with black down the centre of the throat, the black markings on the feathers being lateral and somewhat irregular in shape, the inner webs paler and cream-coloured, imparting a rather broadly streaked appearance to the fore-neck; centre of breast and abdomen white or creamy buff, the feathers notched and barred with dusky, more distinct on the sides of the body; abdomen fulvescent and the under tail-coverts white, both of them scarcely spotted at all; the under wing-coverts white, regularly spotted and barred with dusky; the axillaries regularly banded with black and white; quills ashy grey below, with the same rufous and white tips as on the upper surface: "culmen black, the sides of the upper mandible and the lower one fleshy; legs and feet greenish, washed with brown on the front of the tarsus and toes; iris golden yellow, frosted or stippled with olive at the exterior; gape, orbital and loreal skin greenish and slaty" (*W. V. Legge*). Total length 20 inches, culmen 2, wing 10.6, tail 4, tarsus 2.7.

*Adult female.* Similar to the male.

The sequence of plumages in these Night Herons is not very easy to follow, but the nestling from Mindanao clearly proves that the first plumage is spotted with white and that the quills have broad white tips. Both *G. melanolophus* and *G. goisagi* occur on Mindanao, but the latter is doubtless only a winter visitor, while the former bird is resident. The same thing occurs in the island of Formosa, as has been duly pointed out by Mr. Seeböhm, in his

'Birds of the Japanese Empire,' where the difference between the two species has been correctly given.

In the Hume Collection there are several rufous-coloured birds, which have not yet entirely divested themselves of the wavy immature plumage, while a female from Dibrughur is beginning to put on rufous plumage, though it is still for the most part in the mottled dress of the young. The birds from the Nicobars are decidedly smaller and darker than birds from the mainland, and the wing does not exceed 9.5 inches.

*Young.* Entirely different from the adult, being brown above, thickly mottled and freckled with dusky blackish, and with longitudinal ochraceous shaft-streaks to the feathers of the upper surface; wings like the back; primary coverts for the most part rufous, freckled with dusky, the quills black tipped with white; primaries with a sub-terminal shade of rufous; tail feathers slaty black; crown of head and nape crested, the feathers black, with arrow-shaped spots or bars of white; sides of face and sides of neck regularly barred with ochreous brown and black, with mesial white spots on the feathers on the sides of the neck; chin and upper throat uniform white; the centre of the lower throat and fore-neck generally pale vinaceous buff, varied with black streaks and black mottling or bars, the feathers being browner laterally; sides of the body like the breast, similarly mottled and streaked with white; under tail-coverts white, with scarcely any black markings; under wing-coverts white mottled with dusky; axillaries barred with black and white.

*Hab.* Assam and the Burmese countries to the Nicobars and Andaman Islands, south through the Malayan Peninsula to Borneo and the Philippines, extending north to Hainan and Formosa. A visitor to Southern India and Ceylon during the N.E. monsoon.

|                          |                                                            |                           |
|--------------------------|------------------------------------------------------------|---------------------------|
| a. Ad. sk.               | Coorg ( <i>F. Day</i> ).                                   | India Museum.             |
| b. Ad. sk.               | 20 miles from Belgaum ( <i>E. A. Butler</i> ).             | Hume Coll.                |
| c. ♂ imm. sk.            | Invercauld, Travancore, "2500 feet, in forest," Jan. 3.    | F. Bourdillon, Esq. [C.]. |
| d. Imm. sk.              | Ceylon ( <i>Nerill</i> ).                                  | Tweeddale Coll.           |
| e. Juv. sk.              | Kandy Lake ( <i>A. Whyte</i> ).                            | Tweeddale Coll.           |
| f. ♂ juv. sk.            | Colombo, Nov. 10 ( <i>Hart</i> ).                          | Hume Coll.                |
| g. ♂ ad. sk.             | Dipurbheel, Assam, May ( <i>A. W. Chennell</i> ).          | Tweeddale Coll.           |
| h. ♂ ad.; i. ♀ imm. sk.  | Dibrughur, Assam, July, Sept. ( <i>J. R. Cripps</i> ).     | Hume Coll.                |
| k. Ad. sk.               | Dilkusha, Cachar ( <i>J. Inglis</i> ).                     | Hume Coll.                |
| l. Juv. sk.              | Pegu.                                                      | Tweeddale Coll.           |
| m-g. Ad. et imm. sk.     | Malacca ( <i>Dr. Maingay</i> ).                            | Tweeddale Coll.           |
| r, s, t. Ad. et imm. sk. | Malacca, July, Sept. ( <i>W. Davison</i> ).                | Hume Coll.                |
| u. Ad. sk.               | Malacca.                                                   | Pinwill Coll.             |
| v. ♀ ad.; w. ♂ juv. sk.  | Camorta, Nicobars, Feb., March ( <i>W. Davison</i> ).      | Hume Coll.                |
| x, y. ♂ ♀ ad. sk.        | Katchal Island, Nicobars, Feb. ( <i>R. J. Wimberley</i> ). | Tweeddale Coll.           |

|                                         |                                                                   |                              |
|-----------------------------------------|-------------------------------------------------------------------|------------------------------|
| <i>z.</i> ♀ juv. sk.                    | Nancowry Island, Nicobars,<br>Jan. 28 ( <i>R. J. Wimberley</i> ). | Tweeddale Coll.              |
| <i>a.</i> Ad. sk.                       | Nancowry, Feb. 10 ( <i>W. Davison</i> ).                          | Hume Coll.                   |
| <i>b.</i> ♀ imm. sk.                    | Bompoka Island, Nicobars,<br>March 17 ( <i>W. Davison</i> ).      | Hume Coll.                   |
| <i>c.</i> Juv. sk.                      | Labuan, Borneo.                                                   | Sir Hugh Low [C.].           |
| <i>d.</i> Juv. sk.                      | Sarawak, Borneo.                                                  | Hume Coll.                   |
| <i>e.</i> ♂ ad. sk.                     | Kudat, N. Borneo, Jan.                                            | A. H. Everett, Esq.<br>[P.]. |
| <i>f.</i> ♂ ad.; <i>g, h.</i> ♀ ad. sk. | Palawan.                                                          | A. H. Everett, Esq.<br>[P.]. |
| <i>i.</i> Pull. sk.                     | Mindanao, Philippines, Oct.<br>( <i>D. C. Worcester</i> ).        | Stœere Expedition.           |

2. *Gorsachius goisagi*.

*Nycticorax goisagi*, *Temm. Pl. Col.* pl. 582 (1836: Japan); *Gray, Gen. B.* iii. p. 558 (1847).

*Tigrisoma goisagi*, *Reichenb. Grall.* Taf. 86. fig. 509 (1846-48).

*Ardea goisagi*, *Temm. & Schl. Faun. Jap., Aves*, p. 116, pl. 70 (1850); *Schl. Mus. Pays-Bas, Ardeæ*, p. 54 (1863); *Swinh. Ibis*, 1865, p. 358 (Formosa).

*Botaurus goisagi*, *Reichenb. Grallæ, Novit.* Taf. 149. figs. 2566-67 (1851); *id. Av. Syst. Nat.* p. xvi (1852).

*Gorsachius goisagi*, *Bp. Consp.* ii. p. 138 (1855); *Swinh. Ibis*, 1866, pp. 122, 403.

*Nycticorax melanolophus* (*nec Raffl.*), *Swinh. P. Z. S.* 1863, p. 320.

*Nycticorax goisaki*, *Jerd. B. Ind.* iii. p. 758 (1864).

*Ardea melanocephala* (*lapsu*), *Swinh. Ibis*, 1865, p. 359.

*Gorsachius melanolophus* (*nec Raffl.*), *Swinh. P. Z. S.* 1871, p. 413; *Blakist. & Pryer, Ibis*, 1878, p. 223 (Japan).

**Adult.** Differs from *G. melanolophus* in its deep vinous-chestnut head, which has a little shade of blackish on the forehead only; the mantle is browner, and the upper surface generally never seems to be free from dusky vermiculations; the axillaries are black and rufous instead of black and white, and there are no white tips to the outer primaries. Total length 18 inches, culmen 1.55, wing 10.2, tail 3.7, tarsus 2.5.

**Young.** Differs from the adult in being browner and more uniform on the upper mantle and back, but with the wings much freckled with rufous buff; crown of head dusky blackish, inclining to dark vinous on the neck. The young bird differs from the young of *G. melanolophus* by the rufous tips to the primaries.

The description of the young bird is taken from a bird procured by Mr. Kinger at Nagasaki, which still retains some of the nestling down on the head. Full-grown birds, exactly similar in plumage, are in the collection from Luzon and Ayala in Mindanao: "bill green, culmen black; legs and feet green; iris yellow" (*E. L. Moseley*).

**Hab.** Japan. Occurring as a winter visitor in Formosa and the Philippines.

|                     |                               |                       |
|---------------------|-------------------------------|-----------------------|
| <i>a.</i> Ad. sk.   | Japan.                        | C. Maries, Esq. [C.]. |
| <i>b-d.</i> Ad. sk. | Yokohama ( <i>H. Pryer</i> ). | Seebohm Coll.         |

|                       |                                                       |                       |
|-----------------------|-------------------------------------------------------|-----------------------|
| c. Ad. sk.            | Nagasaki.                                             | Tweeddale Coll.       |
| f, g. ♂ ♀ juv. sk.    | Nagasaki, Aug. 8.                                     | F. Ringer, Esq. [P.]. |
| h. Ad. sk.            | Formosa.                                              | Seeböhm Coll.         |
| i, k. Ad. et juv. sk. | Manila, Luzon ( <i>Maitland Heriot</i> ).             | Tweeddale Coll.       |
| l. ♀ juv. sk.         | Ayala, Mindanao, Dec. 12<br>( <i>E. L. Moseley</i> ). | Steere Expedition.    |

## 19. SYRIGMA.

Type.

|                                                                                                         |                           |
|---------------------------------------------------------------------------------------------------------|---------------------------|
| <i>Syrigma</i> , <i>Ridgway</i> , <i>Bull. U.S. Geol. &amp; Geogr. Surv.</i><br>iv. p. 247 (1878) ..... | <i>S. cyanocephalum</i> . |
| <i>Syrictes</i> , <i>Heine &amp; Reichen. Nomencl. Mus. Hein.</i><br>p. 309 (1890) .....                | <i>S. cyanocephalum</i> . |

*Range.* Confined to South America.1. *Syrigma cyanocephalum*.*Flauta del sol*, *Azara, Apunt.* iii. p. 169 (1805).*Ardea cyanocephala*, *Molina, Vieill. N. Dict. d'Hist. Nat.* xiv. p. 412 (1817); *id. Enc. Méth.* iii. p. 1114 (1823).*Ardea sibilatrix*, *Temminck, Pl. Col.* v. pl. 271 (1823); *Wagler, Syst. Av.*, *Ardea*, p. 183, sp. 24 (1827); *Reichenbach, Grall.* Taf. 91. fig. 465 (1846); *Hartlaub, Ind. Azara*, p. 23 (1847); *Burm. Th. Bras.* iii. p. 407 (1856: Brazil); *Schlegel, Mus. Pays-Bas, Ardeæ*, p. 36 (1863: Brazil); *Sclater & Salvendy, P. Z. S.* 1869, p. 634 (Buenos Ayres); *Pelzmann, Orn. Bras.* pp. 301, 455 (1871: Ytararé); *Gray, Hand-l. B.* iii. p. 90, no. 10143 (1871); *Sclater & Salvendy, Nomencl. Ar. Neotr.* p. 125 (1873); *White, P. Z. S.* 1882, p. 624 (Salta, Nov.); *Barrows, Auk*, i. p. 271 (1884; Lower Uruguay, Nov.); *Sclater & Hudson, Arg. Orn.* ii. p. 100 (1889); *Graham Kerr, Ibis*, 1892, p. 144 (Pilcomayo).*Nycticorax sibilatrix*, *Gray, Gen. B.* iii. p. 558 (1847); *Lichtenstein, Nomencl. Ar. Mus. Berol.* p. 90 (1854: Montevideo); *Reichenbach, J. f. O.* 1877, p. 240.*Buphus sibilatrix*, *Bonaparte, Conspect. Ar.* ii. p. 127 (1855).*Syrigma sibilatrix*, *Ridgway, Bull. U.S. Geol. & Geogr. Surv.* iv. p. 247 (1878).*Syrictes cyanocephalus*, *Heine & Reichen. Nomencl. Mus. Hein.* p. 309 (1890: Brazil).

*Adult male.* Upper back and scapulars ashy grey; lower back, rump, and upper tail-coverts, as well as the tail, creamy white; wing-coverts reddish streaked with grey; bastard-wing, primary-coverts, and quills black, the latter inclining to grey on the outer webs, the secondaries with white bases; head dark slate-colour, with a long nuchal crest, the feathers of which are tipped with whitish; ear-coverts and sides of upper neck pale chestnut; throat white, tinged with rufous; neck all round, fore-neck, and upper breast isabelline; lower breast grey, tinged with rufous; remainder of under surface creamy white, including the under wing-coverts and axillaries. Total length 23 inches, culmen 2.6, wing 12, tail 4.5, tarsus 3.5.

*Hab.* Southern Brazil and Uruguay.

|           |      |      |
|-----------|------|------|
| 1. 1944   | 1944 | 1944 |
| 2. 1945   | 1945 | 1945 |
| 3. 1946   | 1946 | 1946 |
| 4. 1947   | 1947 | 1947 |
| 5. 1948   | 1948 | 1948 |
| 6. 1949   | 1949 | 1949 |
| 7. 1950   | 1950 | 1950 |
| 8. 1951   | 1951 | 1951 |
| 9. 1952   | 1952 | 1952 |
| 10. 1953  | 1953 | 1953 |
| 11. 1954  | 1954 | 1954 |
| 12. 1955  | 1955 | 1955 |
| 13. 1956  | 1956 | 1956 |
| 14. 1957  | 1957 | 1957 |
| 15. 1958  | 1958 | 1958 |
| 16. 1959  | 1959 | 1959 |
| 17. 1960  | 1960 | 1960 |
| 18. 1961  | 1961 | 1961 |
| 19. 1962  | 1962 | 1962 |
| 20. 1963  | 1963 | 1963 |
| 21. 1964  | 1964 | 1964 |
| 22. 1965  | 1965 | 1965 |
| 23. 1966  | 1966 | 1966 |
| 24. 1967  | 1967 | 1967 |
| 25. 1968  | 1968 | 1968 |
| 26. 1969  | 1969 | 1969 |
| 27. 1970  | 1970 | 1970 |
| 28. 1971  | 1971 | 1971 |
| 29. 1972  | 1972 | 1972 |
| 30. 1973  | 1973 | 1973 |
| 31. 1974  | 1974 | 1974 |
| 32. 1975  | 1975 | 1975 |
| 33. 1976  | 1976 | 1976 |
| 34. 1977  | 1977 | 1977 |
| 35. 1978  | 1978 | 1978 |
| 36. 1979  | 1979 | 1979 |
| 37. 1980  | 1980 | 1980 |
| 38. 1981  | 1981 | 1981 |
| 39. 1982  | 1982 | 1982 |
| 40. 1983  | 1983 | 1983 |
| 41. 1984  | 1984 | 1984 |
| 42. 1985  | 1985 | 1985 |
| 43. 1986  | 1986 | 1986 |
| 44. 1987  | 1987 | 1987 |
| 45. 1988  | 1988 | 1988 |
| 46. 1989  | 1989 | 1989 |
| 47. 1990  | 1990 | 1990 |
| 48. 1991  | 1991 | 1991 |
| 49. 1992  | 1992 | 1992 |
| 50. 1993  | 1993 | 1993 |
| 51. 1994  | 1994 | 1994 |
| 52. 1995  | 1995 | 1995 |
| 53. 1996  | 1996 | 1996 |
| 54. 1997  | 1997 | 1997 |
| 55. 1998  | 1998 | 1998 |
| 56. 1999  | 1999 | 1999 |
| 57. 2000  | 2000 | 2000 |
| 58. 2001  | 2001 | 2001 |
| 59. 2002  | 2002 | 2002 |
| 60. 2003  | 2003 | 2003 |
| 61. 2004  | 2004 | 2004 |
| 62. 2005  | 2005 | 2005 |
| 63. 2006  | 2006 | 2006 |
| 64. 2007  | 2007 | 2007 |
| 65. 2008  | 2008 | 2008 |
| 66. 2009  | 2009 | 2009 |
| 67. 2010  | 2010 | 2010 |
| 68. 2011  | 2011 | 2011 |
| 69. 2012  | 2012 | 2012 |
| 70. 2013  | 2013 | 2013 |
| 71. 2014  | 2014 | 2014 |
| 72. 2015  | 2015 | 2015 |
| 73. 2016  | 2016 | 2016 |
| 74. 2017  | 2017 | 2017 |
| 75. 2018  | 2018 | 2018 |
| 76. 2019  | 2019 | 2019 |
| 77. 2020  | 2020 | 2020 |
| 78. 2021  | 2021 | 2021 |
| 79. 2022  | 2022 | 2022 |
| 80. 2023  | 2023 | 2023 |
| 81. 2024  | 2024 | 2024 |
| 82. 2025  | 2025 | 2025 |
| 83. 2026  | 2026 | 2026 |
| 84. 2027  | 2027 | 2027 |
| 85. 2028  | 2028 | 2028 |
| 86. 2029  | 2029 | 2029 |
| 87. 2030  | 2030 | 2030 |
| 88. 2031  | 2031 | 2031 |
| 89. 2032  | 2032 | 2032 |
| 90. 2033  | 2033 | 2033 |
| 91. 2034  | 2034 | 2034 |
| 92. 2035  | 2035 | 2035 |
| 93. 2036  | 2036 | 2036 |
| 94. 2037  | 2037 | 2037 |
| 95. 2038  | 2038 | 2038 |
| 96. 2039  | 2039 | 2039 |
| 97. 2040  | 2040 | 2040 |
| 98. 2041  | 2041 | 2041 |
| 99. 2042  | 2042 | 2042 |
| 100. 2043 | 2043 | 2043 |

**SECRET**

*[Faint, illegible handwritten notes]*

1. Subject: Mathematics  
 2. Topic: Algebra  
 3. Chapter: Linear Equations  
 4. Section: Solving Systems of Equations  
 5. Subtopic: Graphical Solution  
 6. Objective: To understand the graphical method for solving systems of linear equations in two variables.  
 7. Key Concepts: Graphical Solution, System of Linear Equations, Solution Set, Graphical Representation.  
 8. Learning Objectives: Students will be able to graph a system of linear equations and determine the solution set.  
 9. Activities: Graphing a system of linear equations, identifying the solution set, and discussing the graphical representation.  
 10. Assessment: Students will be assessed on their ability to graph a system of linear equations and determine the solution set.  
 11. Resources: Graphing paper, ruler, pencil, and a calculator.  
 12. References: Mathematics Textbook, Chapter 10, Section 10.1.  
 13. Notes: Graphical Solution of a System of Linear Equations in Two Variables.  
 14. Conclusion: The graphical method is a useful tool for solving systems of linear equations in two variables.  
 15. Summary: The graphical method involves graphing the two equations on a coordinate plane and finding the point of intersection, which represents the solution set.  
 16. Key Points: The graphical method is a useful tool for solving systems of linear equations in two variables.  
 17. Conclusion: The graphical method is a useful tool for solving systems of linear equations in two variables.  
 18. Summary: The graphical method involves graphing the two equations on a coordinate plane and finding the point of intersection, which represents the solution set.  
 19. Key Points: The graphical method is a useful tool for solving systems of linear equations in two variables.  
 20. Conclusion: The graphical method is a useful tool for solving systems of linear equations in two variables.

**SECRET**

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.

2. Once the problem is identified, the next step is to define the objectives and goals of the project. This helps to clarify what needs to be achieved and provides a clear direction for the team.

3. The third step is to develop a plan or strategy to address the problem. This involves breaking down the problem into smaller, manageable tasks and determining the resources needed to complete each task.

4. The fourth step is to implement the plan. This involves putting the strategy into action and monitoring progress regularly to ensure that the project is on track.

5. Finally, the fifth step is to evaluate the results of the project. This involves assessing the outcomes against the objectives and goals and identifying any areas for improvement or further action.

[illegible]

1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Arar and Collins (1971). The concentration of *Chlorophyll a* and *Chlorophyll b* was expressed in  $\mu\text{g mL}^{-1}$ .

**Figure 6.** The effect of the number of iterations on the accuracy of the proposed algorithm. The figure shows two plots side-by-side. The left plot is titled "Accuracy vs Iterations" and the right plot is titled "Error vs Iterations". Both plots show the results for three different values of  $\alpha$ : 0.1, 0.2, and 0.3. In both plots, the x-axis represents the number of iterations from 0 to 100, and the y-axis represents either Accuracy or Error. The legend indicates that blue circles represent  $\alpha = 0.1$ , red squares represent  $\alpha = 0.2$ , and green triangles represent  $\alpha = 0.3$ . In the accuracy plot, all three series start at approximately 0.8 and increase towards 1.0 as iterations progress. In the error plot, all three series start at approximately 0.2 and decrease towards 0.0 as iterations progress.

|                              |                                                      |                       |
|------------------------------|------------------------------------------------------|-----------------------|
| <i>e.</i> Ad. sk.            | Nagasaki.                                            | Tweeddale Coll.       |
| <i>f, g.</i> ♂ ♀ juv. sk.    | Nagasaki, Aug. 8.                                    | F. Ringer, Esq. [P.]. |
| <i>h.</i> Ad. sk.            | Formosa.                                             | Sesbohm Coll.         |
| <i>i, k.</i> Ad. et juv. sk. | Manila, Luzon ( <i>Maitland Heriot</i> ).            | Tweeddale Coll.       |
| <i>l.</i> ♀ juv. sk.         | Ayala, Mindanao, Dec. 12<br>( <i>E. L. Mosley</i> ). | Steere Expedition.    |

## 19. SYRIGMA.

Type.

|                                                                                                         |                           |
|---------------------------------------------------------------------------------------------------------|---------------------------|
| <i>Syrigma</i> , <i>Ridgway</i> , <i>Bull. U.S. Geol. &amp; Geogr. Surv.</i><br>iv. p. 247 (1878) ..... | <i>S. cyanocephalum</i> . |
| <i>Syrictes</i> , <i>Heine &amp; Reichen. Nomencl. Mus. Hein.</i><br>p. 309 (1890) .....                | <i>S. cyanocephalum</i> . |

*Range.* Confined to South America.1. *Syrigma cyanocephalum*.

- Flauta del sol*, *Azara*, *Apunt.* iii. p. 169 (1805).  
*Ardea cyanocephala*, *Molina*, *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 412  
 (1817), *id.* *Enc. Méth.* iii. p. 1114 (1823).  
*Ardea sibilatrix*, *Temm. Pl. Col.* v. pl. 271 (1823); *Wagl. Syst. Av.*,  
*Ardea*, p. 183, sp. 24 (1827); *Reichenb. Grall.* Taf. 91. fig. 465  
 (1846); *Hartl. Ind. Azara*, p. 23 (1847); *Burm. Th. Bras.* iii.  
 p. 407 (1856: Brazil); *Schl. Mus. Pays-Bas, Ardeas*, p. 36 (1863:  
 Brazil); *Scl. & Salv. P. Z. S.* 1869, p. 634 (Buenos Ayres); *Petz.*  
*Orn. Bras.* pp. 301, 455 (1871: Ytararé); *Gray, Hand-l. B.* iii.  
 p. 30, no. 16143 (1871); *Scl. & Salv. Nomencl. Av. Neotr.* p. 125  
 (1873); *White, P. Z. S.* 1882, p. 624 (Salta, Nov.); *Barrows,*  
*Auk*, i. p. 271 (1884; Lower Uruguay, Nov.); *Scl. & Huds. Arg.*  
*Orn.* ii. p. 100 (1889); *Graham Kerr, Ibis*, 1892, p. 144  
 (Pilcomayo).  
*Nycticorax sibilatrix*, *Gray, Gen. B.* iii. p. 558 (1847); *Licht.*  
*Nomencl. Av. Mus. Berol.* p. 90 (1854: Montevideo); *Reichen.*  
*J. f. O.* 1877, p. 240.  
*Buphus sibilatrix*, *Bp. Consp. Av.* ii. p. 127 (1855).  
*Syrigma sibilatrix*, *Ridgw. Bull. U.S. Geol. & Geogr. Surv.* iv. p. 247  
 (1878).  
*Syrictes cyanocephalus*, *Heine & Reichen. Nomencl. Mus. Hein.*  
 p. 309 (1890: Brazil).

*Adult male.* Upper back and scapulars ashy grey; lower back, rump, and upper tail-coverts, as well as the tail, creamy white; wing-coverts reddish streaked with grey; bastard-wing, primary-coverts, and quills black, the latter inclining to grey on the outer webs, the secondaries with white bases; head dark slate-colour, with a long nuchal crest, the feathers of which are tipped with whitish; ear-coverts and sides of upper neck pale chestnut; throat white, tinged with rufous; neck all round, fore-neck, and upper breast isabelline; lower breast grey, tinged with rufous; remainder of under surface creamy white, including the under wing-coverts and axillaries. Total length 23 inches, culmen 2.6, wing 12, tail 4.5, tarsus 3.5.

*Hab.* Southern Brazil and Uruguay.

|              |                                     |                       |
|--------------|-------------------------------------|-----------------------|
| a. Ad. st.   | South America.                      | E. Wilson, Esq. [P.]. |
| b. Ad. sk.   | Paysandu, Uruguay, Aug.             | Alan Peel, Esq. [C.]. |
| c. ♀ ad. sk. | Santa Catarina, Brazil (H. Rogers). | Salvin-Godman Coll.   |

## 20. PILERODIUS.

Pilherodius, *Bp. Consp.* ii. p. 139 (1855) ..... Type. P. pileatus.

*Range.* Confined to South America.

## 1. Pilerodius pileatus.

Le Héron blanc du Brésil, *Briss. Orn.* v. p. 434 (1760).

Le Héron blanc huppé de Cayenne, *Daubent. Pl. Enl.* viii. pl. 907.

Le Héron blanc à calotte noire, *Buff. Hist. Nat. Ois.* vii. p. 380 (1780).

*Ardea pileata*, *Bodd. Tabl. Pl. Enl.* p. 54 (1783); *Lath. Ind. Orn.* ii. p. 695 (1790); *Wagl. Syst. Av.*, *Ardea*, p. 182, sp. 23 (1827); *Neuwied, Beitr. Naturg. Bras.* iv. p. 617 (1833); *Burm. Th. Bras.* iii. p. 407 (1856).

Black-crested White Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 92 (1785).

*Ardea alba*, var.  $\beta$ , *Gm. Syst. Nat.* i. p. 639 (1788).

*Nyctiardea pileata*, *Suains. Classif. B.* ii. p. 355 (1837); *Gray, Hand-l. B.* iii. p. 34, no. 10180 (1871).

*Herodias pileata*, *Gray, List Grall. Brit. Mus.* p. 80 (1844).

*Nycticorax pileata*, *Gray, Gen. B.* iii. p. 558 (1847); *Cab. in Schomb. Reis. Guian.* iii. p. 754 (1848); *Scl. & Salv. P. Z. S.* 1867, p. 749 (Nauta), p. 979 (Pebas); *Pelz. Orn. Bras.* p. 302 (1871: Ypanema; Paritis; Cuyaba; Caiçara; Matogrosso; Manaqueri); *Scl. & Salv. Nomencl. Av. Neotr.* p. 126 (1873); *id. P. Z. S.* 1873, p. 305 (Nauta; Santa Cruz; Pebas); *Reichen. J. f. O.* 1877, p. 240; *Tacz. Orn. Pérou*, iii. p. 408 (1886).

*Pilherodius pileatus*, *Bp. Consp. Av.* ii. p. 139 (1855); *id. Compt. Rend.* xl. p. 723 (1855).

*Adult male.* Entirely white all over, including the wings and tail; the primaries with white shafts; on the neck, throat, and fore-neck a tinge of yellow, which is also seen on the primaries; crown of head purplish, middle of the forehead white; on the nape some long white crest-plumes: "lores, bare skin round eye, and bill clear blue, the point of the latter slightly greenish; feet leaden grey; iris greenish grey" (*H. Burmeister*). Total length about 25 inches, culmen 3·2, wing 10·7, tail 4, tarsus 3·7.

*Adult female.* Similar to the male in colour, and having the same decorative plumes on the nape. Total length about 23 inches, culmen 3·4, wing 10·25, tail 4·2, tarsus 3·4.

*Hab.* South America from Guiana to Upper Amazonia and Brazil generally.

|                   |                                          |                         |
|-------------------|------------------------------------------|-------------------------|
| a, b. Ad. sk.     | British Guiana.                          | Sir R. Schomburgk [P.]. |
| c, d. ♂ ♀ ad. sk. | River Rupurumi, Feb., July (H. Whitely). | Salvin-Godman Coll.     |
| e. Ad. sk.        | Bahia, Brazil (Dr. Wucherer).            | Salvin-Godman Coll.     |
| f. Ad. sk.        | Brazil.                                  | Old Coll.               |



|                          |                                               |                       |
|--------------------------|-----------------------------------------------|-----------------------|
| <i>g, h.</i> Ad. sk.     | Brazil.                                       | Gould Coll.           |
| <i>i, k.</i> ♂ ♀ ad. sk. | Pebas, E. Peru, April ( <i>J. Haurwell</i> ). | Salvin-Godman Coll.   |
| <i>l.</i> ♂ ad. sk.      | Peruvian Amazona.                             | Salvin-Godman Coll.   |
| <i>m.</i> Ad. sk.        | Rio de Janeiro.                               | Alex. Fry, Esq. [P-]. |

## 21. BUTORIDES.

|                                                                   |                       |
|-------------------------------------------------------------------|-----------------------|
|                                                                   | Type.                 |
| Butorides, <i>Blyth, Cat. B. As. Soc.</i> p. 281 (1849) . . . . . | <i>B. javanica</i> .  |
| Ocniscus, <i>Cab. J. f. O.</i> 1856, p. 343 . . . . .             | <i>B. virescens</i> . |

*Range.* The whole of the New World with the Galapagos. Africa and Madagascar. Indian Peninsula and China to Japan, through the Burmese countries, Malayan Peninsula, and the entire Malay Archipelago to Australia, and some of the Pacific Islands.

*Key to the Species.*

- a.* Sides of face grey or brown, not rufous.
  - a'*. Wing-coverts margined with sandy or ochraceous buff or whitish.
    - a''*. Throat and fore-neck broadly streaked with rufous.
      - a³*. Streaks on throat light tawny rufous. . . . . *atricapilla*, p. 172.
      - b³*. Streaks on throat dark tawny rufous or chestnut . . . . . *striata*, p. 176.
    - b''*. Throat and fore-neck uniform or mottled with blackish, but never streaked with tawny rufous.
      - c³*. Throat and cheek-stripe white and distinct; abdomen white.
        - a⁴*. Smaller: wing 7 inches . . . . . *javanica*, p. 177.
        - b⁴*. Larger: wing 7-9 inches . . . . . *amurensis*, p. 181.
      - d³*. Throat and cheek-stripe ashy or brown, not distinctly indicated; abdomen rusty.
        - c⁴*. Sides of neck and sides of body dark sooty slate-colour; cheeks and ear-coverts also slate-colour . . . . . *spodiogaster*, p. 182.
        - d⁴*. Sides of neck washed with rusty brown like the sides of the body; abdomen rusty brown; cheeks and ear-coverts also rusty brown . . . . . *stagnatilis*, p. 183.
    - b'*. Wing-coverts uniform, without pale margins. *sundervalli*, p. 185.
  - b.* Sides of face chestnut or maroon like the sides of the neck . . . . . *virescens*, p. 186

1. *Butorides atricapilla*.

*Ardea atricapilla*, *Afzelius, Acta Acad. Stockh.* xxv. p. 264 (1804: Sierra Leone); *Hartl. Orn. W.-Afr.* p. 223 (1857: Casamance; Bissao; Old Calabar; S. Thomas); *id. Beitr. Faun. Madag.* p. 75 (1861); *Scl. P. Z. S.* 1863, p. 164; *Schl. Mus. Pays-Bas, Ardee*, p. 42 (1863); *E. Newt. Ibis*, 1863, p. 456; *Dohrn, P. Z. S.* 1866, p. 330 (Prince's Isl.); *Schl. t. c.* p. 425, pt. (Madagascar); *Grand. Rev. et Mag. de Zool.* 1867, p. 420; *Hartl. P. Z. S.* 1867, p. 827 (Zanzibar); *Finsch, Tr. Z. S.* vii. p. 297 (1870: Massowa); *id. & Hartl. Vög. Ostaf.* p. 701 (1870); *Gray, Hand-l. B.* iii.

- p. 32, no. 10158 (1871); *Heugl. Orn. N.O.-Afr.* ii. pt. i. p. 1080 (1873: S. Nubia; Blue and White Nile); *Reichen. J. f. O.* 1877, p. 254; *Hartl. Vög. Madag.* p. 308 (1877, pt.); *Shelley, Ibis*, 1888, p. 304 (Tangani); *Milne-Edwards & Oust. N. Arch. Mus.* (2) *Bull.* p. 292 (pt., 1889: Mayotte).
- Ardea scapularis*, pt. (*nec Ill.*), *Wagler, Syst. Av.* p. 189, *Ardea*, sp. 35 (1827); *Sundev. Öfv. K. Vet.-Akad. Förh. Stockh.* 1849, p. 163.
- Ardea* (*Nycticorax*) *brevipes*, *Hempr. & Ehr. Symb. Phys.* fol. m. note 2 (1828).
- Egretta thalassina*, *Swains. An. in Menag.* p. 333 (1837).
- Ardetta thalassina*, *Gray, List Grallæ Brit. Mus.* p. 84 (1844).
- Ardea thalassina*, *Gray, Gen. B.* iii. p. 556 (1847).
- Herodias thalassina*, *Hartl. J. f. O.* 1854, p. 291.
- Butorides brevipes*, *Bp. Consp.* ii. p. 129 (1855).
- Butorides atricapilla*, *Bp. Consp.* ii. p. 129 (1855); *Heugl. Ibis*, 1859, p. 346 (Red Sea, S. of 19° N.); *Cass. Proc. Philad. Acad.* 1859, p. 173 (Camma River); *Hartl. J. f. O.* 1861, p. 269 (Casamance); *Kirk, Ibis*, 1864, p. 333 (Zambesi); *Gurney, Ibis*, 1865, p. 271 (Natal); *Sharpe, Ibis*, 1869, p. 194 (Fantee); *Tristr. t. c.* p. 437; *Sharpe, P. Z. S.* 1869, p. 570 (Rio Quanza); *Gurney, Ibis*, 1871, p. 151; *Sharpe, Ibis*, 1871, p. 487 (R. Volta); *Gurney in Anderss. B. Dam. Ld.* p. 292 (1872: Lake Ngami; Okavango); *Antin. & Salvad. Viagg. Bogos*, p. 149 (1873: Massowa); *Ussher, Ibis*, 1874, p. 73; *Sharpe & Bouvier, Bull. Soc. Zool. France*, i. p. 313 (1876: Chiloango); *Oust. N. Arch. Mus.* (2) ii. *Bull.* p. 119 (1879: Lake Silé); *Bocage, Orn. Angola*, p. 446 (1881: Rio Bengo; Rio Coroca; Gambos; Benguela); *Sharpe in Oates' Matabele-Land, App. Birds*, p. 326 (1881); *Shelley, Ibis*, 1882, p. 364 (Umvuli River); *Sharpe, Journ. Linn. Soc., Zool.* xvii. p. 440 (1884: Semmio); *id. ed. Layard's B. S. Afr.* p. 719 (1884); *T. Ayres, Ibis*, 1886, p. 294 (Transvaal); *W. Ayres, Ibis*, 1887, p. 63 (Umzeila's Country); *Reichen. JB. Hamb. Wissensch. Anst.* x. p. 8 (1893: Quilimane); *Sharpe, Bull. B. O. Club*, iii. p. v (1893: Suakin), p. xvii (1894); *Reichen. Vög. Deutsch-Ost-Afr.* p. 64 (1894: Victoria Nyanza; Tanganyika); *Sjöstedt, MT. deutsch. Schutz.* viii. p. 15 (1895); *id. K. Sv. Vet.-Akad. Handl. Stockh.* 1895, p. 34 (Cameroons).
- Herodias sturmi* (*nec Wagl.*), *Licht. Nomencl.* p. 89 (1854: *ex spec. Brehm, teste Heuglin*).
- Ardea sturmi* (*nec Wagler*), *Brehm, J. f. O.* 1856, p. 475 (*teste Heuglin*).
- Buphus griseus* (*nec Bodd.*), *Heugl. Syst. Uebers.* p. 59 (1856).
- Ardetta sturmi* (*nec Wagl.*), *Hartl. J. f. O.* 1861, p. 270.
- Ardea brevipes*, *Heugl. J. f. O.* 1867, p. 283; *Hartl. P. Z. S.* 1881, p. 959 (Socotra).
- Ocniscus atricapillus*, *Cab. in Von der Decken Reis.* iii. p. 50 (1869: Zanzibar).
- Ardea* (*Butorides*) *atricapilla*, *Blanf. Geol. & Zool. Abyss.* p. 435 (1870: Massowa).
- Ardea* (*Oniscus*) *atricapilla*, *Reichen. J. f. O.* 1877, p. 13 (Loango).
- Ardea striata*, subsp. *atricapilla*, *Reichen. J. f. O.* 1877, p. 254.
- Ardea striata*, subsp. *brevipes*, *Reichen. J. f. O.* 1877, p. 254.
- Ardea rutenbergi*, *Hartl. P. Z. S.* 1880, p. 39.
- Ocniscus brevipes*, *Heine & Reichen. Nomencl. Mus. Hein.* p. 308 (1890).

*Ardea atricapilla*, var. *rutenbergi*, *Milne-Edw. & Grandid. H. N. Madag., Ois.* p. 557, pl. ccxxvii a. (1885).

*Ardetta atricapilla*, *Shelley, Ibis*, 1888, p. 304 (Tangani).

*Ardea* (*Butorides*) *nigricollis*, *E. Newton & Gadow, Tr. Z. S.* xiii. p. 289 (1893; lapsu cal. pro "*B. atricapilla*").

*Adult male.* Green, with greyish ornamental plumes on the back; the wing-coverts edged with sandy buff; crown of head greenish black. Similar to *B. javanica* described below, but distinguished by the tawny-rufous markings on the throat and fore-neck: "upper mandible dusky, the lower one greenish yellow with dusky margins; tarsi and feet dusky on the upper surface, yellow on the under; iris light yellow" (*T. Ayres*). Total length 16 inches, culmen 2.3, wing 6.6, tail 2.1, tarsus 1.65, middle toe and claw 1.8.

*Adult female.* Similar to the male. Total length 15 inches, wing 6.8.

*Young.* More dusky than the adults and browner above, and easily distinguished by the ochraceous-buff tips to the feathers of the upper surface; the colour of the under surface tawny rufous, including the throat, the streaks being the same as in the adult, but rather narrower and shaded laterally with rufous.

Several specimens in the Museum Collection exhibit a tendency to a uniform grey throat. This I take to be a sign of age, though Dr. Reichenow believes that it is the specific character of *Butorides brevipes* (H. & E.), which he considers to be confined to the coast-land of the Red Sea. The specimens from Massowa and Suakin in the British Museum do not seem to differ from others from various parts of Africa.

*Hab.* Confined to Tropical Africa and Madagascar.

|                          |                                          |                                          |
|--------------------------|------------------------------------------|------------------------------------------|
| a. Juv. sk.              | River Gambia.                            | Governor Rendall<br>[P.].                |
| b. Juv. sk.              | Bathurst.                                | Shelley Coll.                            |
| c, d. Ad. sk.            | Bathurst, Aug. 21.                       | Dr. Percy Rendall<br>[P.].               |
| e. Juv. sk.              | Coomassie, Ashantee.                     | Godfrey Lagden, Esq.<br>[P.].            |
| f. Juv. sk.              | Ashantee.                                | Gould Coll.                              |
| g, h, i. Ad. et juv. sk. | Wassa Province, Gold Coast.              | Sir R. Burton and<br>Capt. Cameron [P.]. |
| k, l, m. Ad. sk.         | Denkera, Fantee ( <i>H. T. Ussher</i> ). | Sharpe Coll.                             |
| n, o. Ad. sk.            | Fantee.                                  | Shelley Coll.                            |
| p. Ad. sk.               | Accra ( <i>J. Smith</i> ).               | Shelley Coll.                            |
| q. Ad. sk.               | River Volta ( <i>H. T. Ussher</i> ).     | Shelley Coll.                            |
| r. Ad. sk.               | Shonga, River Niger.                     | Capt. Mochler Ferryman [P.].             |
| s. Juv. sk.              | Ogowé River, Gaboon.                     | A. Bouvier, Esq. [P.].                   |
| t. Ad. sk.               | Semnio, Niam-Niam Country,<br>May.       | F. Bohndorff [C.].                       |
| u, v. Ad. sk.            | Ambriz, Angola.                          | Monteiro Coll.                           |
| w. Ad. sk.               | River Coanza.                            | Monteiro Coll.                           |
| z. Ad. sk.               | Natal.                                   | Gurney Coll.                             |

|                                  |                                                                                    |                                      |
|----------------------------------|------------------------------------------------------------------------------------|--------------------------------------|
| <i>y.</i> ♂ ad. sk.              | Tugela River, Natal, May<br>( <i>Gordge</i> ).                                     | Shelley Coll.                        |
| <i>z, a'.</i> Ad. et juv.<br>sk. | Transvaal ( <i>F. Oates</i> ).                                                     | W. E. & C. G. Oates,<br>Esqrs. [P.]. |
| <i>b'.</i> Juv. sk.              | Transvaal ( <i>T. Ayres</i> ).                                                     | Shelley Coll.                        |
| <i>c', d'.</i> ♂ ♀ ad. sk.       | Lehtava River, Umzeila's<br>Country, June ( <i>W. Ayres</i> ).                     | Gurney Coll.                         |
| <i>e'.</i> Ad. sk.               | Makalaka Country ( <i>Dr. Brad-</i><br><i>shaw</i> ).                              | Shelley Coll.                        |
| <i>f'.</i> ♀ ad. sk.             | Palombi River, Shirwa Plain,<br>Nyasa-land, Oct. 10 ( <i>A.</i><br><i>Whyte</i> ). | H. H. Johnston, Esq.,<br>C. B. [P.]. |
| <i>g'.</i> ♂ ad. sk.             | Zomba, Dec. ( <i>A. Whyte</i> ).                                                   | H. H. Johnston, Esq.,<br>C. B. [P.]. |
| <i>h'.</i> Juv. sk.              | Lamu, E. Africa.                                                                   | F. J. Jackson, Esq.<br>[P.].         |
| <i>i', k'.</i> Imm. sk.          | Massowa, Abyssinia, Aug. 24<br>( <i>W. Jesse</i> ).                                | Tweeddale Coll.                      |
| <i>l'.</i> ♀ ad. sk.             | Massowa, Aug. 25.                                                                  | W. T. Blanford, Esq.<br>[C.].        |
| <i>m'.</i> ♀ ad. sk.             | Ain, Bogos-land, Aug. 16<br>( <i>W. Jesse</i> ).                                   | Tweeddale Coll.                      |
| <i>n'.</i> Ad. sk.               | Suakin, Red Sea.                                                                   | Capt. Carpenter [P.].                |
| <i>o'.</i> Ad. sk.               | Suakin.                                                                            | Capt. R. H. Penton<br>[P.].          |

2. *Butorides striata*.

- Ardea striata*, *Linn. Syst. Nat.* i. p. 238 (1766: Surinam); *Gm. Syst. Nat.* i. p. 634 (1788); *Reichen. J. f. O.* 1877, p. 253.  
*Crabier de Cayenne*, *Daubent. Pl. Enl.* viii. pl. 903.  
*Le Crabier gris à tête et queue vertes*, *Buff. Hist. Nat. Ois.* viii. p. 408 (1781).  
*Cancroma grisea*, *Bodd. Tabl. Pl. Enl.* p. 54 (1783).  
*Striated Heron*, *Lath. Gen. Syn.* iii. pt. 1, p. 82 (1785).  
*Ardea torquata*, *Shaw in Miller, Cim. Phys.* pls. 35, 36 (1796).  
*Garza cuello aplomado*, *Azara, Apunt.* iii. p. 177 (1803).  
*Garza cuello pardo*, *Azara, t. c.* p. 180 (1803).  
*Ardea cyanura*, *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 421 (1817).  
*Ardea fuscicollis*, *Vieill. t. c.* p. 410 (1817).  
*Ardea scapularis*, *Licht. Verz. Doubl.* p. 77 (1823, *ex Illiger*); *Wagler, Syst. Av.* p. 189, *Ardea*, sp. 35 (1827); *Neuwied, Beitr. Naturg. Bras.* iv. p. 623 (1833); *Hartl. Ind. Azara*, p. 23 (1847); *Cab. in Schomb. Reis. Guian.* iii. p. 753 (1848); *Burm. Th. Bras.* iii. p. 411 (1856: Lower Parahyba); *Schl. Mus. Pays-Bas*, *Ardea*, p. 42 (1863: Surinam; Caracas); *Finsch, P. Z. S.* 1870, p. 589 (Trinidad); *Pelz. Orn. Bras.* p. 301 (1871: Sapitiba; Matogrosso).  
*Egretta scapularis*, *Swains. An. in Menag.* p. 333 (1837).  
*Ardetta scapularis*, *Gray, List Grallæ Brit. Mus.* p. 84 (1844).  
*Ardea grisea*, *Gray, Gen. B.* iii. p. 556 (1847); *Léot. Ois. Trinid.* p. 421 (1866); *Gray, Hand-l. B.* iii. p. 31, no. 10156 (1871).  
*Butorides scapularis*, *Bp. Consp.* ii. p. 128 (1850); *Scl. & Salv. P. Z. S.* 1866, p. 199 (Ucayali).  
*Butorides grisea*, *Cass. Proc. Philad. Acad.* 1860, p. 196 (Cartagena).  
*Butorides cyanurus*, *Scl. & Salv. P. Z. S.* 1868, p. 145 (Conchitas); *Wyatt, Ibis*, 1871, p. 384 (Lake Paturia); *Scl. & Salv. Nomencl. Av. Neotr.* p. 125 (1873); *Lee, Ibis*, 1873, p. 137 (Argent. Rep.);

- Dumf. Ibis*, 1878, p. 62 (Buenos Ayres); *Scl. & Salv. P. Z. S.* 1879, p. 542 (Medellin); *Salv. & Godm. Ibis*, 1879, p. 206 (Colombia); *W. A. Forbes, Ibis*, 1881, p. 355 (Recifé, breeding); *Tacz. Orn. Pterou*, iii. p. 397 (1884); *Barrows, Auk*, i. p. 271 (1884: Concepcion, breeding); *Withington, Ibis*, 1888, p. 471 (Lomas de Zamora); *Scl. & Hudson, Argent. Orn.* ii. p. 101 (1889); *Holland, Ibis*, 1892, p. 206; *Allen, Bull. Amer. Mus.* v. p. 150 (1893: Matto Grosso).
- Butorides scapulatus (lapsu)*, *Scl. & Salv. P. Z. S.* 1873, p. 305 (Ucayali R.; Santa Cruz).
- Butorides virescens (lapsu)*, *Tacz. P. Z. S.* 1877, p. 746 (Santa Lucia, Peru).
- Butorides striata*, *Baird, Brewer, & Ridgw. Water-Birds N. Amer.* i. p. 60, note (1884); *Berl. & Jhering, Zeitschr. ges. Orn.* ii. p. 78 (1885: Taquara); *Berl. J. f. O.* 1889, p. 318 (Ucayali); *id. J. f. O.* 1892, p. 104; *Peters, t. c.* p. 120 (Curaçao); *Sharpe, Bull. B. O. Club*, iii. p. xvii (1894).
- Ocniscus striatus*, *Heine & Reichen. Nomencl. Mus. Hein.* p. 306 (1890).

*Adult male.* Very similar to *B. atricapilla* and scarcely distinguishable, the only apparent character being that the rufous markings on the throat and fore-neck are of a deep rusty red or chestnut: "bill blackish brown, with a pale greyish-green spot on the lower edge of the under mandible; lores dark indigo-blue, as well as the vicinity of the eye; toes bright orange-red; claws black; iris brilliant orange-red" (*Neuwied*). Total length 14.5 inches, culmen 2.4, wing 6.55, tail 2.2, tarsus 1.8, middle toe and claw 1.5.

*Young.* Resembles that of *B. atricapilla*.

*Hab.* South America, from Colombia to Ecuador and Peru; Venezuela, Guiana, and Amazonia to Brazil and the Argentine Republic, being rarer to the southward.

|                                 |                                                              |                          |
|---------------------------------|--------------------------------------------------------------|--------------------------|
| a. ♀ ad. sk.                    | Medellin, U.S. Colombia ( <i>T. H. Salmon</i> ).             | Salvin-Godman Coll.      |
| b. Ad. sk.                      | Valle Dupar, U.S. Colombia ( <i>F. A. A. Simons</i> ).       | Salvin-Godman Coll.      |
| c. Ad. sk.                      | Quito, Ecuador.                                              | Gould Coll.              |
| d. Ad. sk.                      | Sarayacu, Ecuador ( <i>C. Buckley</i> ).                     | Salvin-Godman Coll.      |
| e. ♂ imm. sk.                   | Bartica Grove, British Guiana, Nov. 2 ( <i>H. Whitely</i> ). | Salvin-Godman Coll.      |
| f. Ad. sk.                      | Island of Mexiana, Dec. ( <i>A. R. Wallace</i> ).            | Salvin-Godman Coll.      |
| g-k. Ad.; l. Juv. sk.           | Pernambuco ( <i>W. A. Forbes</i> ).                          | Salvin-Godman Coll.      |
| m, n. Ad.; o. Juv. sk.          | Recifé ( <i>W. A. Forbes</i> ).                              | Salvin-Godman Coll.      |
| p, q, r. Ad.; s, t, u. Juv. sk. | Bahia ( <i>J. Wucherer</i> ).                                | Salvin-Godman Coll.      |
| v. Ad. sk.                      | Chapada, Matto Grosso ( <i>Mrs. H. H. Smith</i> ).           | Salvin-Godman Coll.      |
| w. ♂ ad. sk.                    | Pelotas, Rio Grande do Sul ( <i>Joyner</i> ).                | Salvin-Godman Coll.      |
| x-c'. Ad. sk.                   | Rio de Janeiro.                                              | Alexander Fry, Esq. [P.] |

|                       |                                                                  |                     |
|-----------------------|------------------------------------------------------------------|---------------------|
| <i>d'</i> . ♀ ad. sk. | Ypanema, Feb. ( <i>J. Natterer</i> ).                            | Salvin-Godman Coll. |
| <i>e'</i> . ♂ ad. sk. | Lomas de Zamora, Buenos Ayres, Feb. 19 ( <i>F. Withington</i> ). | Sclater Coll.       |

3. *Butorides javanica*.

*Ardea javanica*, *Horsf. Tr. Linn. Soc.* xiii. p. 190 (1821: Java); *Raffles, t. c.* p. 326 (1822: Sumatra); *Gray, Gen. B.* iii. p. 556 (1847); *Schl. Mus. Pays-Bas*, *Ardea*, p. 43 (1863); *Finsch & Hartl. Vög. Ostaf.* p. 703 (1870, note); *Gray, Hand-l. B.* iii. p. 31, no. 10157 (1871); *Brüggem. Abhandl. nat. Ver. Bremen*, v. p. 97 (1876: Celebes); *Vorderm. N. T. Nederl. Ind.* xlii. p. 231 (1882: Java).

*Ardea scapularis*, pt., *Wagler, Syst. Av.* p. 187, sp. 35 (1827).

*Egretta javanica*, *Swains. Classif. B.* ii. p. 334 (1837).

*Ardetta javanica*, *Gray, List Grallæ Brit. Mus.* p. 84 (1844: Nepal); *id. Cat. Mamm. etc. Nepal pres. Hodys.* p. 135 (1846).

*Egretta chloriceps vel virescens*, *Hodys. Icon. ined. in Brit. Mus., Grallæ*, App. pl. 42 (no. 682); *id. in Gray's Zool. Misc.* p. 85 (1844).

*Butorides javanica*, *Blyth, Cat. B. Mus. As. Soc. Beng.* p. 281 (1849: Calcutta); *Bp. Consp.* ii. p. 130 (1855); *Swinh. Ibis*, 1860, pp. 132, 358 (Amoy); *Scl. P. Z. S.* 1863, p. 223 (Banjarmassin); *Jerd. B. Ind.* iii. p. 752 (1864); *Blyth, Ibis*, 1867, p. 173; *Hume, Ibis*, 1869, p. 238 (Agra, nesting); *Godwin-Aust. J. A. S. Beng.* xxxix. p. 274 (1870: Khasia Hills); *Swinh. P. Z. S.* 1871, p. 413 (S. China, breeding); *Holdsw. P. Z. S.* 1872, p. 478; *Wald. & Layard, Ibis*, 1872, p. 105 (Negros); *Wald. Tr. Z. S.* viii. p. 100 (1872: Celebes); *Hume, Nests & Eggs Ind. B.* p. 620 (1873); *id. Str. F.* i. p. 256 (1873: Sind); *Adam, t. c.* p. 399 (Sambhur); *Hume, t. c.* p. 450 (Acheen); *Salvad. Ucc. Born.* p. 351 (1874: Sarawak); *Ball, Str. F.* ii. p. 435 (1874: Chota Nagpur); *Oates, Str. F.* iii. p. 191 (1875); *Blyth & Wald. B. Burm.* p. 160 (1875: Tonghoo; Rangoon); *Wald. Tr. Zool. Soc.* ix. p. 237 (1875: Luzon; Negros); *Godw.-Aust. J. A. S. Beng.* xlv. p. 85 (1876); *Butler & Hume, Str. F.* iv. pp. 24, 35 (1876: Mt. Aboo, &c.); *Fairb. t. c.* p. 263 (Deccan); *Hume, t. c.* p. 404 (Travancore); *id. t. c.* p. 467 (Laccadives); *Sharpe, Ibis*, 1876, p. 52 (Sibu); *Hume, Str. F.* v. p. 47 (1877: Cachar); *Tweedd. Ibis*, 1877, p. 323 (Lampong); *id. P. Z. S.* 1877, p. 703 (Luzon); *id. P. Z. S.* 1878, p. 114 (Dinagat; Nipah), p. 624 (Palawan), p. 345 (Amparo); *David & Oust. Ois. Chine*, p. 422 (1877, pt.); *Anders. Rep. Zool. Coll. Yunnan, Birds*, p. 689 (1878: Sawady; Bhamó); *Hume & Davison, Str. F.* vi. p. 483 (1878: Tenasserim); *Davidson & Wend. Str. F.* vii. p. 91 (1878: Satuna); *Butler, t. c.* p. 187 (E. Narra); *Ball, t. c.* p. 230 (Ganges—Godaveri); *Cripps, t. c.* p. 308 (Faridpur); *Hume, t. c.* p. 490 (Calcutta); *Leyge, B. Ceylon*, p. 1153 (1879); *Hume, Str. F.* viii. p. 71 (Malacca), p. 114; *Doig, t. c.* p. 372 (E. Narra, breeding); *Meyer, Ibis*, 1879, p. 143 (Tondano Lake; Menado); *Butler, Cat. B. Sind etc.* p. 70 (1879); *id. Cat. B. S. Bomb. Pres.* p. 83 (1880); *Vidal, Str. F.* ix. p. 90 (1880: S. Konkan); *Bingham, t. c.* p. 197 (Attaran R.); *Butler, t. c.* p. 434 (Sholapur, breeding); *Sharpe, P. Z. S.* 1881, p. 800 (Sandakan); *Kelham, Ibis*, 1882, p. 195 (Perak); *Davidson, Str. F.* x. p. 324 (1882: W. Khandeish); *Davison, t. c.* p. 416 (1883: Wynaad; Mysore); *Oates, Handb. B. Brit. Burm.* ii. p. 254 (1883); *Nichols. Ibis*, 1883, p. 256 (Sumatra); *Murray, Vertebr. Faun. Sind*, p. 273

- (1884); *Vorderm. N. T. Nederl. Ind.* xliv. p. 202 (1885: Java); *Swinh. & Barnes, Ibis*, 1885, p. 130 (Mhow); *Guillem. P. Z. S.* 1885, p. 274 (Sulu Isl.), p. 501 (Kema; Menado); *Blasius, Zeitschr. ges. Orn.* iii. p. 167 (1886: Celebes); *Saunders, P. Z. S.* 1886, p. 376 (Diego Garcia); *Reid, Str. P.* x. p. 453 (1887: Lucknow, breeding); *Hume, Str. P.* xi. p. 334 (1888: Manipur); *Sharpe, Ibis*, 1888, p. 204 (Palawan); *Everett, P. Z. S.* 1889, p. 225; *Vorderm. N. T. Nederl. Ind.* xlix. p. 417 (1889: Sumatra); *Whitehead, Ibis*, 1890, p. 60; *Sharpe, l. c.* p. 147 (Kina Balu), p. 285 (Lawas R.); *Oates, ed. Hume's Nests & Eggs Ind. B.* iii. p. 249 (1890); *Vorderm. op. cit.* li. p. 422 (1891: Bawean Isl.); *Slyan, Ibis*, 1891, pp. 327, 493 (Lower Yangtse); *De la Touche, Ibis*, 1892, p. 489 (River Min, Foochow); *Sharpe, Ibis*, 1894, pp. 245, 258 (Bongno); *id. Bull. B. O. Club*, iii. p. xvii (1894); *Salvad. Ann. Mus. Genov.* (2) xiv. p. 601 (1894: Mentawai).
- Ardetta thalassina* (nec Sw.), *Kelaart, Prodr. Faun. Ceyl.* p. 133 (1852).
- Herodias javanica*, *Licht. Nomencl. Av. Nérol.* p. 89 (1854).
- Butorides chloriceps*, *Bp. Conspectus* ii. p. 120 (1855).
- Herodias asha* (nec Sykes), *Swinh. Ibis*, 1880, p. 64 (err.).
- Ardea atricapilla* (nec Afzel.), *E. Newton, Ibis*, 1887, pp. 351, 389 (Seychelles); *Hartl. Voy. Madag.* p. 308 (1877, pt.); *Milne-Edes & Oud. N. Arch. Mus.* (2) x. p. 281 (1888: Comoros).
- Ardea strinta*, subsp. *javanica*, *Reichen. J. f. O.* 1877, p. 254.
- Butorides atricapilla* (nec Afzel.), *Sharpe, Phil. Trans.* extra vol. 168. p. 462 (1879: Rodriguez).
- Ardetta atricapilla* (nec Afzel.), *Shelley, P. Z. S.* 1879, p. 679 (Grand Comoro and Anjuan Isl.).
- Oeniscus javanicus*, *Haine & Reichen. Nomencl. Mus. Hem.* p. 308 (1890).

*Adult male.* General colour above light slaty grey, the feathers of the back with hoary-white shaft-lines; the long scapular-feathers green, or green with grey tips; wing-coverts and quills dark green with ochreous-buff margins, inclining to white on the edges of the greater coverts and secondaries, most of the quills being fringed with white at the ends; lower back, rump, and upper tail-coverts dull green, more or less powdered with grey; tail also dull green; crown of head dark glossy green, with the nape-feathers produced into a point; the hind-neck and sides of neck grey, extending over the sides of the face and ear-coverts; below the eye a streak of greenish black extending along the ear-coverts, along the upper part of which runs a whitish streak from behind the eye to the level of the nape; another streak of white from the base of the lower mandible along the cheeks; throat, fore-neck, and abdomen white; sides of body and flanks, including the overhanging feathers on the sides of the upper breast, slaty grey like the sides of the neck, leaving the centre of the throat and fore-neck white, slightly varied with dingy brown markings, these markings being on the edges of the throat-feathers; the axillaries and under wing-coverts grey, like the quill-lining: "upper mandible black, with a longitudinal yellow streak along the margin below the nostrils; gape greenish brown; lower mandible greenish yellow, more or less black along the edges; facial skin green; legs and toes green, front of the tarsus and toes dusky, soles orange, and claws horn-colour; iris yellow"



(*E. W. Oates*). Total length 19 inches, culmen 2·75, wing 7, tail 2·5, tarsus 2, middle toe and claw 2·1.

*Adult female*. Exactly like the male, but a trifle more dingy, especially in the throat-markings, where the brown is a little more distinct on the margins of the feathers. Total length 18 inches, culmen 2·4, wing 6·8, tail 2·75, tarsus 1·8, middle toe and claw 2.

*Winter plumage*. Duller than in summer and much greener above, without any grey shading; the head green.

*Young*. Brown above; the wing-coverts with triangular whitish or sandy-buff spots at their ends; the head black, streaked with ochreous-buff shaft-lines; sides of face and under surface of body whitish, strongly streaked with dusky-blackish margins to the feathers.

The young bird is browner than the adults, with white mesial streaks on the wing-coverts; crown of head dusky black; under surface of body less grey and washed with brown.

*Hab.* Indian Peninsula and Ceylon, the Burmese countries and China to the Yangtse River, Formosa, Philippines, Malayan Peninsula, Borneo, Java, Sumatra, and Celebes; the Mascarene Islands and Diego Garcia.

|                                    |                                                         |                                                    |
|------------------------------------|---------------------------------------------------------|----------------------------------------------------|
| a-i. Ad. et juv. sk.               | Sikhim, Nov., Jan., Feb. ( <i>L. Mandelli</i> ).        | Hume Coll.                                         |
| k. Ad. sk.                         | Native Sikhim, Jan. ( <i>L. Mandelli</i> ).             | Hume Coll.                                         |
| l, m. Ad. sk.                      | Nepal.                                                  | Hodgson Coll.<br>(Types of <i>E. chloriceps</i> .) |
| n. Ad. sk.                         | Nepal ( <i>B. H. Hodgson</i> ).                         | India Museum.                                      |
| o. Ad. sk.                         | Kumaon ( <i>Strachey</i> ).                             | India Museum.                                      |
| p. ♂ ad. sk.                       | Kumaon Bhabur, Jan. 25 ( <i>G. King</i> ).              | Hume Coll.                                         |
| q. Ad. sk.                         | Cashmere.                                               | Hume Coll.                                         |
| r, s. ♀ ad. et juv. sk.            | Larkhana, Sind, Jan. 5 ( <i>A. O. H.</i> ).             | Hume Coll.                                         |
| t, u. ♂ ad.; v. ♀ ad.; w. Juv. sk. | Hydrabad, Sind, June, Sept. ( <i>E. A. Butler</i> ).    | Hume Coll.                                         |
| x, y. Ad. sk.                      | Etawah.                                                 | Hume Coll.                                         |
| z. ♀ ad. sk.                       | Futtehghurh, July 2 ( <i>A. Anderson</i> ).             | Seeborn Coll.                                      |
| α'-α'. Ad. et juv. sk.             | Gondah, Oudh.                                           | Pinwill Coll.                                      |
| ε'. Ad. sk.                        | Behar.                                                  | Hodgson Coll.                                      |
| f'. Ad. sk.                        | Dinapore.                                               | Pinwill Coll.                                      |
| g'. ♂ ad. sk.                      | Dinapore, Oct. 24 ( <i>W. E. Brooks</i> ).              | Hume Coll.                                         |
| h'. ♂ ad. sk.                      | Sumbalpur, Jan. 2.                                      | Hume Coll.                                         |
| i'. ♀ ad. sk.                      | Mhow, Oct. 18.                                          | Colonel Swinhoe [P.].                              |
| k', l'. Ad.; m', n'. Imm. sk.      | Saugor, Jan.                                            | Hume Coll.                                         |
| o', p'. Ad. sk.                    | Seoni.                                                  | Hume Coll.                                         |
| q'. Ad. sk.                        | Deccan ( <i>Sykes</i> ).                                | India Museum.                                      |
| r', s'. Ad. sk.                    | Khandeish.                                              | India Museum.                                      |
| t'. ♂ ad. et juv.; u'. ♀ juv. sk.  | Dhulia, Oct., Jan. ( <i>J. Davidson</i> ).              | Hume Coll.                                         |
| v'. ♀ ad. sk.                      | Koma River, near Pan, May 20 ( <i>S. B. Fairbank</i> ). | Hume Coll.                                         |

|                                 |                                                                 |                                 |
|---------------------------------|-----------------------------------------------------------------|---------------------------------|
| w'. ♂ ad. sk.                   | Bangalore, July 9 ( <i>R. G. W. R.</i> ).                       | Tweeddale Coll.                 |
| a'. Juv. sk.                    | Travancore.                                                     | F. W. Bourdillon,<br>Esq. [P.]. |
| y'. Vix ad. sk.                 | Merchiston, Travancore, Mar.<br>27 ( <i>F. W. Bourdillon</i> ). | Hume Coll.                      |
| z'. Juv. sk.                    | Cardamum Isl., Laccadives,<br>June 18 ( <i>A. O. H.</i> ).      | Hume Coll.                      |
| a''. ♂ ad. sk.                  | Ratticaloa, Ceylon, Feb. 2<br>( <i>S. Chapman</i> ).            | Tweeddale Coll.                 |
| b''. ♀ ad. sk.                  | Colombo, Ceylon, March 2<br>( <i>W. V. Legge</i> ).             | Dr. R. B. Sharpe<br>[P.].       |
| c''. Ad. sk.                    | Assam ( <i>McClelland</i> ).                                    | India Museum.                   |
| d''. ♀ ad. sk.                  | Sadhyia, June 7 ( <i>J. Cockburn</i> ).                         | Hume Coll.                      |
| e''. ♂ ad. sk.                  | Bhramapootra River, Dec. 2<br>( <i>W. Davison</i> ).            | Hume Coll.                      |
| f'', g''. Ad. sk.               | Cachar, March ( <i>J. Inglis</i> ).                             | Hume Coll.                      |
| h''. ♀ ad. sk.                  | Limatol, Manipur, Feb. 13<br>( <i>A. O. H.</i> ).               | Hume Coll.                      |
| i''. ♂ ad. sk.                  | Faridpur, June 19 ( <i>J. R.<br/>Cripps</i> ).                  | Hume Coll.                      |
| k''. Ad. sk.                    | Dacca.                                                          | Hume Coll.                      |
| l''. Ad. sk.                    | Comilla, Tipperah.                                              | Hume Coll.                      |
| m'', n''. ♂ ♀ ad. sk.           | Lower Pegu, Feb. 27 ( <i>E. W.<br/>O.</i> ).                    | Oates Coll.                     |
| o'', p''. Ad. sk.               | Tonghoo, Jan. 22 ( <i>R. G. W. R.</i> ).                        | Tweeddale Coll.                 |
| q''. Ad. sk.                    | Rangoon, Dec. ( <i>R. G. W. R.</i> ).                           | Tweeddale Coll.                 |
| r''. ♂ ad. sk.                  | Younzaleen River, Feb. 14<br>( <i>W. Davison</i> ).             | Hume Coll.                      |
| s''. ♀ ad. sk.                  | Wimpong, Tenasserim, Jan.<br>13 ( <i>W. Davison</i> ).          | Hume Coll.                      |
| t'', u''. ♂ ♀ imm.<br>sk.       | Kaukaryit, Aug., Oct. ( <i>J.<br/>Darling</i> ).                | Hume Coll.                      |
| v'', w''. ♂ ad. sk.             | Amherst, Feb., July ( <i>W.<br/>Davison</i> ).                  | Hume Coll.                      |
| x''-a³. ♂ ad.; b³.<br>♀ ad. sk. | Tavoy, May, June ( <i>W. Davi-<br/>son</i> ).                   | Hume Coll.                      |
| c³. ♀ juv. sk.                  | Choungthanoung, Dec. 25<br>( <i>W. Davison</i> ).               | Hume Coll.                      |
| d³. ♂ ad.; e³. ♀<br>juv. sk.    | Mergui, June, Nov. ( <i>W.<br/>Davison</i> ).                   | Hume Coll.                      |
| f³. ♂ ad. sk.                   | Bankasoon, April 22 ( <i>W.<br/>Davison</i> ).                  | Hume Coll.                      |
| g³, h³. Ad. et juv.<br>sk.      | Saigon, Cochin China.                                           | M. E. Pierre [P.].              |
| i³, k³, l³. ♂ ad. sk.           | Tonka, Jan., Feb. ( <i>J. Dar-<br/>ling</i> ).                  | Hume Coll.                      |
| m³, n³, o³. Ad. et<br>juv. sk.  | Penang ( <i>Dr. Cantor</i> ).                                   | India Museum.                   |
| p³, q³. Ad. sk.                 | Malacca, July, Aug. ( <i>W.<br/>Davison</i> ).                  | Hume Coll.                      |
| r³, s³. Imm. sk.                | Malacca ( <i>Dr. Maingay</i> ).                                 | Tweeddale Coll.                 |
| t³. Ad. sk.                     | Malacca ( <i>Dr. Cantor</i> ).                                  | India Museum.                   |
| u³. ♀ imm. sk.                  | Johore, Nov. 4.                                                 | Capt. Kelsall [P.].             |
| v³. Juv. sk.                    | Java.                                                           | Gould Coll.                     |
| w³. ♂ ad. sk.                   | Java.                                                           | Seebohm Coll.                   |
| x³, y³. Ad. sk.                 | Lampung, S.E. Sumatra ( <i>E.<br/>C. Burton</i> ).              | Tweeddale Coll.                 |

|                                             |                                                               |                             |
|---------------------------------------------|---------------------------------------------------------------|-----------------------------|
| $z^3$ . Ad. sk.                             | Borneo.                                                       | Rajah Brooke [P.]           |
| $a^4$ . ♀ juv. sk.                          | Monte Alban, Luzon, March<br>( <i>A. H. Everett</i> ).        | Tweeddale Coll.             |
| $b^4$ . Ad. sk.                             | Island of Negros.                                             | Tweeddale Coll.             |
| $c^4$ . ♂ ad. sk.                           | Amparo, S. Leyte, July ( <i>A. H. Everett</i> ).              | Tweeddale Coll.             |
| $d^4, e^4$ . ♂ ad.; $f^4$ .<br>♀ ad. sk.    | Butuan, May ( <i>A. H. Everett</i> ).                         | Tweeddale Coll.             |
| $g^4$ . ♀ ad. sk.                           | Dinagat ( <i>A. H. Everett</i> ).                             | Tweeddale Coll.             |
| $h^4$ . ♀ ad. sk.                           | Nipah Island, July ( <i>A. H. Everett</i> ).                  | Tweeddale Coll.             |
| $i^4$ . ♀ ad. sk.                           | Bongao, Sulu Arch., July.                                     | A. H. Everett, Esq.<br>[C.] |
| $k^4$ . ♀ ad. sk.                           | Puerto Princesa, Palawan,<br>Jan. 6 ( <i>A. H. Everett</i> ). | Tweeddale Coll.             |
| $l^4$ . Ad. sk.                             | Celebes.                                                      | Tweeddale Coll.             |
| $m^4$ . Ad. sk.                             | Menado.                                                       | Wallace Coll.               |
| $n^4$ . ♂ ad. sk.                           | Gorontalo, Celebes, April 29<br>( <i>von Rosenberg</i> ).     | Salvin-Godman Coll.         |
| $o^4$ . ♂ ad. sk.                           | China ( <i>R. Swinhoe</i> ).                                  | Seebohm Coll.               |
| $p^4$ . Ad. sk.                             | Hong Kong, April ( <i>R. S.</i> ).                            | Seebohm Coll.               |
| $q^4, r^4$ . Ad. sk.                        | Amoy, July, Sept. ( <i>R. S.</i> ).                           | Seebohm Coll.               |
| $s^4, t^4, u^4$ . Ad. et juv.<br>sk.        | Canton ( <i>Bligh</i> ).                                      | Seebohm Coll.               |
| $v^4$ . ♀ ad. sk.                           | Shanghai, May 15.                                             | Shanghai Museum.            |
| $w^4$ . Ad. sk.                             | Shanghai, June.                                               | F. W. Styan, Esq.<br>[P.]   |
| $x^4, y^4$ . Imm. sk.                       | Takow, Formosa ( <i>R. Swinhoe</i> ).                         | Seebohm Coll.               |
| $z^4$ . Juv. sk.                            | S.W. Formosa ( <i>R. Swinhoe</i> ).                           | Seebohm Coll.               |
| $a^5$ . Ad. sk.                             | [Mauritius.]                                                  | Sir A. Smith [C.]           |
| $b^5$ . Ad. sk.                             | Mauritius.                                                    | Sharpe Coll.                |
| $c^5$ . Imm. sk.                            | Mauritius.                                                    | India Museum [P.]           |
| $d^5$ . ♀ ad. sk.                           | Rodriguez.                                                    | Rev. H. H. Slater<br>[C.]   |
| $e^5, f^5$ . Juv.; $g^5$ .<br>Ad. hiem. sk. | Seychelles, March ( <i>Dr. Copping</i> ).                     | Voy. H.M.S. 'Alert.'        |
| $h^5$ . Ad. sk.                             | Anjuan Isl. ( <i>Sir J. Kirk</i> ).                           | Shelley Coll.               |
| $i^5$ . Juv. sk.                            | Great Comoro Isl. ( <i>Sir J. Kirk</i> ).                     | Shelley Coll.               |
| $k^5$ . Bones of trunk.                     | Nepal.                                                        | Hodgson Coll.               |
| $l^5$ . Sternum.                            | Rodriguez.                                                    | Rev. H. H. Slater<br>[C.]   |

Subsp. a. *Butorides amurensis*.

*Ardea scapularis* (*nec Licht.*), *Temm. & Schl. Faun. Jap., Aves*, p. 116 (1850).

*Butorides chloriceps*, pt., *Bp. Consp.* ii. p. 129 (1855).

*Ardea javanica* (*nec Horsf.*), *Motl. & Dillw. N. H. Labuan*, p. 59 (1855).

*Ardea* (*Butorides*) *virescens*, var. *scapularis*, *Schrenck, Reis. Amurl.* i. p. 437 (1860); *Radde, Reis. Sibir., Vög.* ii. p. 344 (1863).

*Ardea virescens*, var. *amurensis*, *Schrenck, t. c.* p. 441 (1860).

*Ardea macrorhyncha* (*nec Gould*), *Schl. Mus. Pays-Bas, Ardeæ*, p. 44 (1863: Japan).

*Butorides javanica* (*nec Horsf.*), *Swinh. Ibis*, 1866, p. 297 (Formosa); *Tweedd. P. Z. S.* 1877, p. 560 (Cebu).

*Butorides macrorhynchus* (*nec Gould*), *Swinh. P. Z. S.* 1871, p. 413; *Tacz. J. f. O.* 1875, p. 256 (Ussuri); *Salvad. Ucc. Born.* p. 353 (Labuan); *Tacz. Bull. Soc. Zool. France*, i. p. 258 (1876); *David & Ouat. Ois. Chine*, p. 443 (1877); *Blakist. & Pryer, Tr. As. Soc. Japan*, x. p. 120 (1882); *Seebahn, Ibis*, 1884, p. 35 (Nagasaki); *Blakist. Amend. List B. Japan*, p. 34 (1884); *Vorderm. N. T. Nederl. Ind.* xlv. p. 202 (1885: Java).

*Nycticorax griseus*, *Blakist. & Pryer, Tr. As. Soc. Japan*, x. p. 117 (1882: *teste Stejneger*).

*Butorides schrenckii*, *Bogd. Consp. Av. Imp. Ross.* i. p. 115 (1884).

*Butorides javanicus amurensis*, *Stejn. Proc. U.S. Nat. Mus.* x. p. 298 (1887: Japan, Philippines).

*Nycticorax javanicus*, *Seeb. B. Japan. Emp.* p. 224 (1890).

*Butorides amurensis*, *Sharpe, Bull. B.O. Club*, iii. p. xvii (1894).

Similar to *B. javanica*, but larger, and with a coarser and stronger bill. Total length 5 inches, culmen 2·7, wing 7·9, tail 2·7, tarsus 1·9.

*Hab.* From Amur-land and south along the coast of China to the Philippine Islands, Java, and Orneo.

|                |                                                         |                           |
|----------------|---------------------------------------------------------|---------------------------|
| a. Ad. sk.     | Sidemi, Amur-land, June 25 ( <i>G. M. S. Swinhoe</i> ). | Seebahn Coll.             |
| b. ♂ ad. sk.   | Nagasaki, Japan, March 4.                               | F. Ringer, Esq. [P.].     |
| c. Ad. sk.     | Canton ( <i>Tuckett</i> ).                              | Tweeddale Coll.           |
| d. e. Imm. sk. | Formosa, Nov. ( <i>R. Swinhoe</i> ).                    | Seebahn Coll.             |
| f. Ad. sk.     | Cebu, Philippines, March ( <i>A. H. Everett</i> ).      | Tweeddale Coll.           |
| g. ♀ ad. sk.   | Palawan, Jan.                                           | A. H. Everett, Esq. [P.]. |
| h. ♂ imm. sk.  | Labuan, Oct.                                            | A. H. Everett, Esq. [P.]. |

### Subsp. β. *Butorides spodiogaster*. (Plate II.)

*Butorides javanica* (*nec Horsf.*), *Blyth, Ibis*, 1866, p. 221 (Andamans); *Beavan, Ibis*, 1867, p. 333 (Andamans); *Ball, Str. F.* i. p. 88 (1873: Andamans); *Walden, Ibis*, 1873, p. 321 (S. Andaman, Feb.); *Hume, Str. F.* ii. p. 310 (1874: Andamans and Nicobars).

*Butorides spodiogaster*, *Sharpe, Bull. B. O. C.* iii. p. xvii (1894).

*Adult.* Similar to *B. javanica*, but darker grey on the under surface, which is of a sooty-slate colour with a slight tinge of rusty on the abdomen, the cheeks and ear-coverts uniform slate-colour. It much resembles *B. stagnatilis*, especially the birds from Flores, but is not so dingy underneath and has a less shade of rusty on the abdomen. "Bill black, lower portion of lower mandible, from base to tip, edged pale horny; front of tarsus, toes, and claws brownish green, bare portion of tibia and back of tarsus dirty greenish yellow; soles clear, slightly greenish, yellow; iris bright yellow; naked skin round eye dull green, tinged with yellow in front; eyelids deep green" (*A. O. Hume*). Total length 17·5 inches, culmen 2·35, wing 6·7, tail 2·1, tarsus 1·7.

*Hab.* Andaman Islands and Nicobars.

|              |                                        |            |
|--------------|----------------------------------------|------------|
| a. ♀ ad. sk. | Andamans, March ( <i>W. Davison</i> ). | Hume Coll. |
|--------------|----------------------------------------|------------|

|                                            |                                                               |                 |
|--------------------------------------------|---------------------------------------------------------------|-----------------|
| <i>b.</i> ♀ juv. sk.                       | Macpherson Straits, Andamans, March 3 ( <i>R. G. W. R.</i> ). | Tweeddale Coll. |
| <i>c, d.</i> ♀ ad. et juv. sk.             | South Andamans, Feb. 2 ( <i>R. G. W. R.</i> ).                | Tweeddale Coll. |
| <i>e.</i> ♂ ad. sk.                        | Port Blair, S. Andamans, July 24 ( <i>R. J. Wimberley</i> ).  | Tweeddale Coll. |
| <i>f-i.</i> ♂ ♀ ad.; <i>k, l.</i> Juv. sk. | Port Blair, May to Aug. ( <i>R. J. Wimberley</i> ).           | Hume Coll.      |
| <i>m.</i> ♀ ad. sk.                        | Corbyn's Cove, May 2 ( <i>W. Davison</i> ).                   | Hume Coll.      |
| <i>n.</i> ♂ ad. sk.                        | Viper Island, Dec. 19 ( <i>W. Davison</i> ).                  | Hume Coll.      |
| <i>o.</i> Ad. sk.                          | Aberdeen, Dec. 26 ( <i>W. Davison</i> ).                      | Hume Coll.      |
| <i>p, q.</i> ♂ ♀ ad. sk.                   | Great Nicobars, March 12.                                     | Hume Coll.      |
| <i>r, s.</i> ♂ ad.; <i>t.</i> ♀ juv. sk.   | Nancowry Island, Feb. 24.                                     | Hume Coll.      |
| <i>u.</i> ♀ ad.; <i>v, w, x.</i> Pull. sk. | Camorta Island, Dec. ( <i>R. J. Wimberley</i> ).              | Tweeddale Coll. |

4. *Butorides stagnatilis*.

*Ardetta stagnatilis*, Gould, *P. Z. S.* 1847, p. 221 (Port Essington); *id.* *B. Austr.* vi. pl. 67 (1848); *Reichenb. Vög. Neuhol.* ii. p. 201 (1850); *Macgill. Voy. 'Rattlesnake,'* ii. p. 358 (1852: Torres Straits); *Gray, P. Z. S.* 1858, p. 197; *id.* *Cat. Mamm. etc. New Guinea*, p. 62 (1859); *id.* *P. Z. S.* 1861, p. 433 (Aru Is.); *Rosenb. J. f. O.* 1864, p. 136.

*Ardetta macrorhyncha*, Gould, *P. Z. S.* 1848, p. 39 (E. Australia); *id.* *B. Austr.* vi. pl. 66 (1848); *Reichenb. Vög. Neuhol.* p. 202 (1850); *id.* *Grall.* tab. 338. figs. 2669-70.

*Ardea patruelis*, Peale, *U.S. Expl. Exp.* p. 216, pl. 61. fig. 1 (1848: Tahiti); *Hartl. Arch. f. Naturg.* 1852, p. 118; *id.* *J. f. O.* 1854, p. 169; *Gray, Hand-l. B.* iii. p. 32, no. 10160 (1871).

*Ardea stagnalis*, Gray, *Gen. B.* iii. App. p. 25 (1849); *id.* *Cat. B. Trop. Isl. Pacific Ocean*, p. 49 (1859); *Cass. U.S. Expl. Exp., Birds*, p. 297 (1858).

*Ardea macrorhyncha*, Gray, *Gen. B.* iii. App. p. 25 (1849); *Schl. Mus. Pays-Bas, Ardeæ*, p. 44 (1863, pt.); *Finsch, Neu-Guinea*, p. 183 (1865).

*Butorides stagnatilis*, Bp. *Consp.* ii. p. 130 (1855); *Sharpe, Bull. B. O. C.* iii. p. xviii (1894).

*Butorides patruelis*, Bp. *t. c.* p. 130 (1855); *Stejn. Proc. U. S. Nat. Mus.* x. p. 299 (1867).

*Butorides macrorhyncha*, Bp. *Consp.* ii. p. 131 (1855); *Gould, Handb. B. Austr.* ii. p. 316 (1865); *Ramsay, Proc. Linn. Soc. N. S. W.* ii. p. 199 (1878); *id.* *Tab. List Austr. B.* p. 21 (1888); *North, Proc. Linn. Soc. N. S. W.* (2) i. p. 1164 (1887: eggs).

*Ardea viridiceps*, Gray, *P. Z. S.* 1860, p. 364 (E. Gilolo).

*Butorides javanica* (*nec Horsf.*), Wallace, *P. Z. S.* 1863, p. 35 (Bourou); *id.* *t. c.* p. 487 (Flores; Timor); *Finsch, Neu-Guinea*, p. 183 (1865, pt.); *Gould, Handb. B. Austr.* ii. p. 317 (1865); *Ramsay, Ibis*, 1866, p. 355 (Pt. Denison); *Layard, Ibis*, 1875, p. 440 (Kandavu, breeding), 1876, p. 393 (Viti Levu); *Ramsay, Proc. Linn. Soc. N. S. W.* i. p. 395 (1876: Norman R.), ii. p. 199 (1878), iii. p. 116 (1879: Hall Sound), p. 299 (Laloki River); *Sharpe, Journ. Linn. Soc., Zool.* xiii. p. 328 (1877: Yule Isl.);

- Salvad. P. Z. S.* 1878, p. 83 (Amboina); *Ramsay, Proc. Linn. Soc. N.S.W.* iv. p. 84 (1880: Savo); *Meyer, Verh. z.-b. Ges. Wien*, 1881, p. 767 (Sumba); *Salvad. Rep. Voy. 'Challenger,' ii. Birds*, p. 64 (1881); *id. Orn. Papuasia*, iii. p. 359 (1882: Halmahera, Dorey, Aru Is., Jobi, Ceram-laut); *Blasius, P. Z. S.* 1882, p. 710 (Ceram); *Layard, Ibis*, 1882, pp. 531, 644 (New Caledonia); *Tristr. Ibis*, 1882, p. 144 (Savo); *Meyer, Zeitachr. ges. Orn.* i. p. 295 (1884); *Pleske, Bull. Acad. St. Pétersb.* xxix. p. 538 (1884: Ternate); *Sharpe, Rep. Zool. Coll. 'Alert,'* p. 28 (1884: Thursday Island); *Nehrke, J. f. O.* 1885, p. 35 (Waigiu); *Ogilvie-Grant, P. Z. S.* 1887, p. 333 (Fauro), 1888, p. 202 (Aola); *Ramsay, Tab. List Austr. B.* p. 21 (1888); *North, Nests & Eggs Austr. B.* p. 322 (1889); *Salvad. Ann. Mus. Genov.* (2) x. p. 287 (1891); *id. Agg. Orn. Papuasia*, iii. p. 206 (1891); *Wiglesw. Abhandl. k. Zool. Mus. Dresden*, no. 6, p. 68 (1891: Society Is.; Fiji Is.); *Tristr. Ibis*, 1892, p. 297 (Solomon Is.).
- Ardea javanica* (*nec Horsf.*), *Finsch, Neu-Guinea*, p. 183 (1865, pt.); *id. & Hartl. Faun. Centralpolyn.* p. 207 (1867); *Layard, P. Z. S.* 1875, p. 440 (Kandavu); *id. Ibis*, 1876, p. 393 (Viti Levu); *E. L. & E. L. C. Layard, Ibis*, 1878, p. 264 (New Caledonia); *Nehrke, J. f. O.* 1879, p. 408 (Waigiu); *Reichen. J. f. O.* 1891, p. 127 (Viti Levu).
- Ocniscus patruelis*, *Cub. & Reichen. J. f. O.* 1876, p. 326.
- Ardea striata*, subsp. *macrorhyncha*, *Reichen. J. f. O.* 1877, p. 254 (pt.).
- Ardea striata*, subsp. *stagnatilis*, *Reichen. t. c.* p. 254.
- Ardetta javanica* (*nec Horsf.*), *D'Albert. & Salvad. Ann. Mus. Genov.* xiv. p. 132 (1879).

**Adult.** Similar to *B. javanica*, but larger and darker; the white cheek-stripe and white throat obsolete, these parts being ashy or brown; cheeks and ear-coverts rusty-brown; under surface of body dingy rusty-brown with a tinge of slate-colour; abdomen and thighs rusty-brown as also the under tail-coverts: "upper mandible and cutting-edge of lower mandible very dark reddish brown; remainder of lower mandible oil-green; tibia and hinder part of tarsi bright yellow; remainder of legs and feet yellowish brown; iris light yellow; orbits and eyelash gamboge-yellow" (*J. Gould*). Total length 17 inches, culmen 2.8, wing 7.7, tail 2.6, tarsus 1.9, middle toe and claw 2.25.

**Young.** Darker than the young of *B. javanica*, and, as in that species, distinguished by the white or sandy-coloured spots on the wing-coverts; throat white, mottled with sandy spots or streaks.

I have not been able to discover any evidence of the existence of two species of Green Heron in Australia, so far as my experience of the series in the British Museum enables me to judge; and I believe that Gould's *B. macrorhyncha* is the same species as his *B. stagnatilis*, being founded upon young or winter-plumaged specimens. Although in his pictures he has coloured the soft parts differently, I consider these colours to be due to seasonal changes only.

**Hab.** Northern and Eastern Australia, New Guinea, and the Molucca Islands, Timor and Flores, Solomon Islands, New Caledonia, Fiji Islands, Society Islands, Friendly Islands.

|                       |                                                                 |                           |
|-----------------------|-----------------------------------------------------------------|---------------------------|
| a. Ad. sk.            | New South Wales.                                                | Australian Museum.        |
| b-n. Ad. et juv. sk.  | Queensland ( <i>J. T. Cockerell</i> ).                          | Salvin-Godman Coll.       |
| o. Ad. sk.            | Cape Upstart.                                                   | J. B. Jukes, Esq. [P.].   |
| p. Ad. sk.            | Thursday Island, Torres Straits, June ( <i>Dr. Coppinger</i> ). | Voy. H.M.S. 'Alert.'      |
| q. ♀ imm. sk.         | 1st Cousin Island, Aug. 14 ( <i>G. M. Rayner</i> ).             | Voy. H.M.S. 'Herald.'     |
| r. ♂ ad. sk.          | Yule Island, S.E. New Guinea.                                   | Dr. James [C.].           |
| s. Ad. sk.            | New Guinea.                                                     | Wallace Coll.             |
| t. ♂ ad. sk.          | Bourou ( <i>A. R. Wallace</i> ).                                | Seebohm Coll.             |
| u, v. Ad. et juv. sk. | Amboina.                                                        | Voy. H.M.S. 'Challenger.' |
| w. Ad. sk.            | East Gilolo.                                                    | Wallace Coll.             |
| x. Ad. sk.            | Morotai.                                                        | Wallace Coll.             |
| y. ♂ ad. sk.          | East Timor.                                                     | Wallace Coll.             |
| z. ♂ juv. sk.         | Semao, Timor.                                                   | Wallace Coll.             |
| a', b'. Ad. sk.       | Flores.                                                         | Wallace Coll.             |
| c'. Ad. sk.           | Fiji Islands, Nov. ( <i>F. M. Rayner</i> ).                     | Voy. H.M.S. 'Herald.'     |
| d'. Ad. sk.           | Savu, Fiji Islands ( <i>E. L. Layard</i> ).                     | Tweeddale Coll.           |

5. *Butorides sundevalli*.

*Butorides javanicus* (*nec Horsf.*), *Scl. & Salv. P. Z. S.* 1870, p. 323 (Indefatigable Isl.).

*Ardea plumbea* (*nec Merr.*), *Sundev. P. Z. S.* 1871, pp. 125, 127 (James Island).

*Butorides plumbeus* (*nec Merr.*), *Salv. Tr. Z. S.* ix. pp. 464, 497 (1875: Indefatigable Isl.); *id. P. Z. S.* 1883, p. 428 (Charles Isl.); *Ridgw. Proc. U.S. Nat. Mus.* xii. p. 128 (1889: Chatham Isl.); *Sharpe, Bull. B. O. C.* iii. p. xviii (1894).

*Ardea plumbea*, *Reichen. J. f. O.* 1877, p. 253.

*Adult.* Differs from all the other species of the genus in wanting the reddish edgings to the wing-coverts; head and sides of face black like the neck; wings, lower back, rump, and tail black glossed with green, the primaries dusted with slaty grey; mantle and scapulars dark slaty grey, the scapular plumes and inner secondaries pointed and ornamental; under surface of body dark slate-colour, the throat, fore-neck, and under wing- and tail-coverts black; the throat with a few white streaks. Total length 18 inches, culmen 2·6, wing 7·3, tail 2·4, tarsus 2.

*Young.* Similarly coloured to the young of the other species of the genus, but much darker than any, the general colour being blackish or blackish brown.

*Hab.* Galapagos Islands.

|                    |                                                           |                     |
|--------------------|-----------------------------------------------------------|---------------------|
| a. Ad. sk.         | Charles Island, Galapagos, Feb. ( <i>A. H. Markham</i> ). | Salvin-Godman Coll. |
| b, c. ♂ ♀ juv. sk. | Indefatigable Isl., Aug. ( <i>Dr. A. Habel</i> ).         | Salvin-Godman Coll. |



6. *Butorides virescens*.

- Small Bittern, *Catesby, Nat. Hist. Carol.* i. pl. 80 (1731).  
 Le Crabier verd, *Briss. Orn.* v. p. 488, pl. xxxviii. fig. 1 (1760);  
*Buff. Hist. Nat. Ois.* vii. p. 404 (1780).  
*Ardea virescens*, *Linn. Syst. Nat.* i. p. 238 (1766); *Gm. Syst. Nat.*  
 i. p. 635 (1788); *Wilson, Am. Orn.* vii. p. 97, pl. 61. fig. 1 (1813);  
*Audub. B. Am.* p. 333 (c. 1826); *Wayl. Syst. Ar.* *Ardea*, p. 95,  
 sp. 36 (1827); *Audub. Orn. Biogr.* iv. p. 274 (1838); *D'Orbign. in*  
*Ramon de la Sagra, Hist. Nat. Cuba, Aves*, p. 203 (1839); *Audub.*  
*B. Amer.* 8vo, vi. p. 105, pl. 367 (1843); *Denny, P. Z. S.* 1847, p. 39;  
*Gray, Gen. B.* iii. p. 556 (1847), *Burm. Th. Bras.* iii. p. 412  
 (1856: N. Brazil; Pará); *Bryant, Pr. Boat. Soc.* vii. p. 120 (1859:  
 Bahamas); *Schl. Mus. Pays-Bas, Ardeæ*, p. 41 (1863); *Sundev.*  
*Cefv. K. Vet.-Akad. Stockh.* 1869, p. 589 (S. Bartholomew), p. 602  
 (Porto Rico); *Gray, Hand-l. B.* iii. p. 31, no 10155 (1871), *Coues,*  
*Key N. Amer. B.* p. 269 (1872); *id. B. N.-West*, p. 522 (1874);  
*Reichen. J. f. O.* 1877, p. 255; *Cory, B. Bahamas*, p. 171 (1880);  
*Tristr. Ibis*, 1884, p. 168; *Cory, Ibis*, 1886, pp. 472-475; *id. Auk*,  
 iii. p. 502 (1886: Grand Cayman), *A. O. U. Check-l. N. Amer.*  
*B.* p. 137 (1886); *Scott, Auk*, iv. p. 138 (1887: Florida); *Cory,*  
*t. c.* p. 326 (Bahamas & Antilles), *Merrill, Auk*, v. p. 144 (1888:  
 Fort Klamath); *Chapman, t. c.* p. 269 (Florida); *Eschm. t. c.*  
 p. 348 (Indiana); *Scott, Auk*, vi. p. 18 (1889: Florida, breeding);  
*Cory, t. c.* p. 32 (Cayman Brac); *F. H. Allen, t. c.* p. 76 (New  
 Hampshire); *Loonius, Auk*, vii. p. 35 (1890: S. Carolina); *Mearns,*  
*t. c.* p. 48 (Arizona); *Scott, t. c.* p. 308 (Dry Tortugas); *Schick, t. c.*  
 p. 327 (New Jersey), *Cherrie, t. c.* p. 332 (Costa Rica, breeding);  
*Cory, t. c.* p. 374 (Ortola), p. 375 (Virgin Gorda); *id. B. Bahamas,*  
 p. 171 (1890); *id. Auk*, viii. p. 47 (1891: St. Croix), p. 48 (St.  
 Kitts); *Brewster & Chapm. t. c.* p. 137 (Suwanee River); *Wayne,*  
*t. c.* p. 232 (S. Carolina); *Cory, t. c.* p. 295 (Berry Isl.), p. 350  
 (Eleuthera Isl.), p. 351 (Inagua); *Scott, Auk*, ix. p. 10 (1891:  
 Jamaica); *Cory, t. c.* p. 48 (Maraguana); *Scott, t. c.* p. 211 (Ca-  
 loosahatchie, Florida), *Atwater, t. c.* p. 232 (San Antonio);  
*Cory, t. c.* p. 272 (San Antonio); *Cherrie, t. c.* p. 329 (Costa Rica,  
 resident); *Cory, Cat. B. W. Ind.* p. 90 (1892).  
 Crabier tacheté de la Martinique, *D'Aubent. Pl. Enl.* viii. pl. 912.  
 Crabier de la Louisiane, *D'Aubent. Pl. Enl.* viii. pl. 909.  
 Le Crabier vert tacheté, *Buff. Hist. Nat. Ois.* viii. p. 405 (1781).  
 Le Crabier roux à tête et queue vertes, *Buff. Hist. Nat. Ois.* viii.  
 p. 407 (1781).  
*Ardea chloroptera*, *Bodd. Tabl. Pl. Enl.* p. 54 (1783).  
*Cancroma maculata*, *Bodd. Tabl. Pl. Enl.* p. 54 (1783).  
 Green Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 68 (1785); *Nuttall, Man.*  
*Orn.* ii. p. 63 (1834).  
 Louisiana Heron, *Lath. t. c.* p. 81.  
*Ardea ludoviciana*, *Gm. Syst. Nat.* i. p. 630 (1788).  
*Egretta virescens*, *Swains. An. in Menag.* p. 333 (1837).  
*Herodias virescens*, *Bp. Comp. List B. Eur. & N. Amer.* p. 48  
 (1838); *Gosse, B. Jamaica*, p. 340 (1847).  
*Ardetta virescens*, *Gray, List Grall. Brit. Mus.* p. 84 (1844).  
*Ardea brunneascens*, *Lembeye, Av. Cuba*, p. 84 (1850); *Reichen. J. f. O.*  
 1877, p. 255; *Cory, List B. W. Ind.* p. 28 (1885); *id. Auk*, iv. p. 327  
 (Cuba).  
*Butorides virescens*, *Bp. Consp. Av.* ii. p. 128 (1855); *Scl. P. Z. S.*  
 1856, p. 310 (Cordova); *Sallé, P. Z. S.* 1857, p. 236 (S. Domingo);  
*Baird, B. N. Amer.* p. 677 (1858); *Scl. & Salt. Ibis*, 1859, p. 227

- (Guatemala); *Newton*, *t. c.* p. 261 (St. Croix); *Cass. Pr. Phil. Acad.* 1860, p. 378 (St. Thomas); *March, op. cit.* 1864, p. 64 (Jamaica); *E. C. Taylor, Ibis*, 1864, p. 93 (Trinidad), p. 171 (Porto Rico); *Scl. & Salv. P. Z. S.* 1867, p. 250 (Mosquito); *ibid. op. cit.* 1869, p. 252 (Venezuela); *Lawr. Ann. Lyc. N. Y.* ix. p. 142 (1868: Costa Rica); *Salv. P. Z. S.* 1870, p. 218 (Veragua); *Allen, Bull. Mus. C. Z.* ii. p. 359 (1871: Florida); *Scl. P. Z. S.* 1871, p. 273 (Sta. Lucia); *Allen, Bull. Mus. C. Z.* iii. p. 182 (1872: Kansas); *Scl. & Salv. Nomencl. Av. Neotr.* p. 125 (1873: Mexico & Central America); *Hensh. Rep. Zool. Expl. 100th Merid.* p. 465 (1875); *Reichen. J. f. O.* 1877, p. 255; *Merrill, Pr. U.S. Nat. Mus.* i. p. 165 (1878: S. Texas, breeding); *Lawr. t. c.* p. 196 (S. Vincent), p. 236 (Antigua), p. 241 (Barbados, breeding), p. 275 (Grenada), p. 359 (Martinique); *Belding, t. c.* p. 442 (Stockton & Murphys, San Joaquin, Cal., breeding); *Lawr. t. c.* p. 460 (Guadeloupe); *Scl. & Salv. P. Z. S.* 1879, p. 542 (Medellin); *Scl. P. Z. S.* 1879, p. 765 (Montserrat); *Ridgw. Pr. U.S. Nat. Mus.* iii. p. 197 (1880); *A. & E. Newton, Handb. Jamaica*, p. 111 (1881); *Coues, Check-list N. Amer. B.* p. 107 (1882); *Nutting, Pr. U.S. Nat. Mus.* v. p. 406 (1882: Costa Rica); *Ridgw. t. c.* p. 502; *Belding, t. c.* p. 544 (Lower Calif.); *Salv. P. Z. S.* 1883, p. 428 (Acapulco); *Boucard, t. c.* p. 458 (Yucatan); *Baird, Brewer, & Ridgw. Water-B. N. Amer.* i. p. 50 (1884); *Coues, Key N. Am. B.* 2nd ed. p. 662 (1884); *Agersb. Auk*, ii. p. 287 (1885: S. Dakota, breeds); *Scl. P. Z. S.* 1889, p. 326 (Dominica); *Hartert, Ibis*, 1893, pp. 307, 325, 334 (Aruba; Bonaire; Curaçao); *Sharpe, Bull. B. O. Club*, iii. p. xviii (1894).
- Ocniscus virescens*, *Gundl. J. f. O.* 1856, p. 343 (Cuba); *Brewer, Proc. Bost. Soc.* 1860, p. 308 (Cuba); *Gundl. Rep. Fis. Nat. Cuba*, p. 349 (1866); *ibid. J. f. O.* 1875, p. 307; *ibid. Ann. Soc. Esp. N. H.* vii. p. 359 (1878: Porto Rico); *Heine & Reichen. Nomencl. Mus. Hein.* p. 308 (1890).
- Ocniscus brunnescens*, *Cab. J. f. O.* 1856, p. 344; *Brewer, Pr. Bost. Soc.* vii. p. 308 (1860); *Gundl. J. f. O.* 1875, p. 308.
- Butorides brunnescens*, *Baird, B. N. Amer.* p. 677 (1858); *March, Pr. Phil. Acad.* 1864, p. 64 (Jamaica); *Ridgw. Pr. U.S. Nat. Mus.* iii. pp. 214, 237 (1880); *Baird, Brewer, & Ridgw. Water-B. N. Amer.* i. p. 49 (1884).
- Ardea (Butorides) virescens*, *Bryant, Proc. Bost. Soc.* xi. p. 97 (1867: S. Domingo).
- Ardea bahamensis*, *Brewster, Auk*, v. p. 83 (1888).
- Ardea virescens frazari*, *Brewster, Auk*, v. p. 83 (1888: Lower California).
- Butorides saturatus*, *Ridgw. Pr. U.S. Nat. Mus.* x. p. 577 (1887: Swan Island).
- Ardea virescens bahamensis*, *Cory, Cat. B. W. Ind.* p. 90 (1892).

*Adult male in breeding-plumage.* General colour above green, the long dorsal plumes and scapulars hoary grey, at least at their ends; wings green like the back, with somewhat of a purplish reflection under certain lights, all the feathers fringed with ochraceous or reddish brown, the lesser wing-coverts very distinctly, but the greater coverts and secondaries with a very narrow fringe of whitish; bastard-wing, primary-coverts, and quills dark slate-colour, with narrow whitish fringes to the tips; lower back, rump, upper tail-coverts, and tail dark green; crown of head and occipital crest glossy

dark green; sides of face and ear-coverts deep chestnut, with a black line running from the gape to the ear-coverts, and succeeded by another line of buffy whitish along the upper edge of the cheeks; throat white slightly tinged with rufous; sides of neck and the feathers covering the hind-neck purplish chestnut with a decided gloss of grey, the feathers in the centre of the throat as well as the long feathers on the fore-neck streaked with black and white, the main colour of the feathers being whitish with broad oval marks of black in the centre, the long feathers of the fore-neck strongly tinged with rufous; the remainder of the under surface of the body from the chest downwards slaty grey, including the under wing-coverts and axillaries; the abdomen a trifle lighter, as also the under tail-coverts, the long ones of which have dark-green centres near the ends; thighs light ashy with a rusty tinge; marginal coverts round the bend of the wing white tinged with rufous: "bill greenish black above, bright yellow beneath; feet greenish yellow, claws dusky; iris and bare part about the eye bright yellow" (*J. J. Audubon*). Total length 12·5 inches, culmen 2·45, wing 7, tail 2·5, tarsus 2·05, middle toe and claw 2·1.

*Adult female.* Similar to the male, but with the grey colour of the ornamental plumes not quite so strongly developed. Total length about 12·5 inches, culmen 2·7, wing 7·5, tail 2·1, tarsus 1·9, middle toe and claw 2·2.

*Adults in winter plumage* are distinguished by having the sides of the face and neck much more chestnut than in the breeding-season. They have also the long plumes of the back entirely green. The beautiful shade of grey and the purplish bloom on the neck-feathers are only assumed for the breeding-season.

From the description above given it will be seen that I do not recognize the two races of Green Heron, which have been called by Mr. Brewster *B. frazari* and *B. bahamensis*. *B. frazari* seems to me to have been founded on birds in full breeding-plumage, which have not lost the purplish and "glaucous" lustre which appears to be peculiar to birds killed in the early part of the year. Brewster further separates *B. bahamensis* on account of its chestnut colour, but this similar tint of rufous is exhibited by specimens killed in winter, in various places, such as Mexico, Guatemala, St. Croix, &c. Mr. Ridgway's *B. saturatus* is said to be a larger bird than *B. virescens*, but I greatly doubt its specific distinctness from the typical form.

*Young birds* are much duller in colour than the adults, and are of a more oily-green, the feathers of the crown streaked with rufous, and the wing-coverts margined with the same colour, the median and greater series with a triangular spot of white at the tip, the under surface of body white or yellowish white, the throat entirely so, but the lower throat, fore-neck, and chest longitudinally streaked with blackish; the quills have more distinct white tips than in the adult birds.

In the first winter plumage of the young birds there is a general similarity to the colour of the adults, but the back, though it has

long dorsal plumes, is entirely green, and the throat and fore-neck are much more mottled with black streaks and centres to the feathers than in the adult birds. The green feathers of the back are of course assumed at the autumn moult; but the grey colour of the decorative plumes and the purplish neck with the glaucous lustre, which are merely indicative of breeding-plumage, are assumed at the nesting-season without any direct moult.

*Hab.* North America generally, through Central America to Panama and Venezuela. Greater and Lesser Antilles.

|                                     |                                                                                    |                              |
|-------------------------------------|------------------------------------------------------------------------------------|------------------------------|
| a. Juv. sk.                         | New Jersey.                                                                        | J. E. Harting, Esq.<br>[P.]. |
| b. ♂ ad.; c, d.<br>♀ imm. sk.       | Sing Sing, New York, Sept.<br>(C. H. Merriam: <i>Hensh.</i><br><i>Coll.</i> ).     | Salvin-Godman Coll.          |
| e, f. ♀ juv. sk.                    | Lyons Falls, N. Y., Aug. 19<br>(A. J. Dayan: <i>Hensh. Coll.</i> ).                | Salvin-Godman Coll.          |
| g. ♂ ad. sk.                        | Mount Carmel, Illinois, Aug. 25<br>(E. W. Nelson: <i>Hensh. Coll.</i> ).           | Salvin-Godman Coll.          |
| h. ♀ juv. sk.                       | Wellesley, Mass., Oct. 4 (H.<br>W. Henshaw).                                       | Salvin-Godman Coll.          |
| i. Imm. sk.                         | Eastern Branch, District Co-<br>lumbia, Aug. 21 ( <i>Elliot</i><br><i>Coues</i> ). | Salvin-Godman Coll.          |
| k. ♀ ad. sk.                        | Aiken, S. Carolina, March 27<br>(C. H. Merriam: <i>Hensh.</i><br><i>Coll.</i> ).   | Salvin-Godman Coll.          |
| l. Juv. sk.                         | Arlington, Virginia, July 22<br>( <i>Elliot Coues</i> ).                           | Salvin-Godman Coll.          |
| m, n. Ad. sk.                       | Florida.                                                                           | W. B. Dismore, Esq.<br>[P.]. |
| o-s. ♂ ad. et juv.;<br>t. ♀ ad. sk. | Tarpon Springs, Florida, March,<br>April, July (W. E. D. Scott).                   | Salvin-Godman Coll.          |
| u. ♂ ad. sk.                        | De Soto County, Florida (W.<br>R. Dean).                                           | Salvin-Godman Coll.          |
| v, w. ♀ ad. sk.                     | Bermuda, April.                                                                    | Capt. Savile Reid [C.].      |
| x. Ad. sk.                          | California.                                                                        | J. H. Gurney, Esq.<br>[P.].  |
| y, z, a'. ♂ ♀ ad.<br>sk.            | Rio San Juan, Nuevo Leon,<br>May 25 (F. B. Armstrong).                             | Salvin-Godman Coll.          |
| b', c'. ♂ ad. sk.                   | Brownsville, Texas, March,<br>May (F. B. Armstrong).                               | Salvin-Godman Coll.          |
| d', e'. ♂ ad. et<br>juv. sk.        | Corpus Christi, Oct. 1 (F. B.<br>Armstrong).                                       | Salvin-Godman Coll.          |
| f'. ♂ ad. sk.                       | Hidalgo, April 6 (F. B. Arm-<br>strong).                                           | Salvin-Godman Coll.          |
| g'. ♀ ad. sk.                       | Aransas Bay, Jan. 4 (F. B.<br>Armstrong).                                          | Salvin-Godman Coll.          |
| h', i'. ♂ ; k'. ♀<br>ad. sk.        | Nueces County, April to June<br>(F. B. Armstrong).                                 | Salvin-Godman Coll.          |
| l'. ♂ ad. sk.                       | San Antonio, April 23 (H. E.<br>Dresser).                                          | Salvin-Godman Coll.          |
| m'. ♀ ; n', o', p'.<br>♂ ad. sk.    | Tampico, Mexico, June (W. B.<br>Richardson).                                       | Salvin-Godman Coll.          |
| q'. ♂ ad. sk.                       | Cordova, Sept. (Ferrari-Perez).                                                    | Salvin-Godman Coll.          |

|                                              |                                                                          |                           |
|----------------------------------------------|--------------------------------------------------------------------------|---------------------------|
| <i>r', s'</i> . ♂ ad. et juv. sk.            | Laguna Verde, Vera Cruz, Jan. ( <i>M. Trujillo</i> ).                    | Salvin-Godman Coll.       |
| <i>t'</i> . ♀ ad. sk.                        | Sochiapa, Vera Cruz, Jan. ( <i>M. Trujillo</i> ).                        | Salvin-Godman Coll.       |
| <i>w', r'</i> . ♂ ♀ ad. sk.                  | Presidio, Dec. Jan. ( <i>A. Forrer</i> ).                                | Salvin-Godman Coll.       |
| <i>w'</i> . ♀ ad. sk.                        | Colima, Jalisco, June 9 ( <i>W. Lloyd</i> ).                             | Salvin-Godman Coll.       |
| <i>x'</i> . Ad. sk.                          | Acapulco, March ( <i>A. H. Markham</i> ).                                | Salvin-Godman Coll.       |
| <i>y'</i> . Juv. sk.                         | Acapulco, Sept. ( <i>D. W. Smith</i> ).                                  | Salvin-Godman Coll.       |
| <i>z'</i> . ♂ ad. sk.                        | Chimalapa, Tehuantepec, Mar. 11 ( <i>W. B. Richardson</i> ).             | Salvin-Godman Coll.       |
| <i>a''</i> . ♂ ad. sk.                       | Tizimin, Northern Yucatan, April 22 ( <i>G. F. Gaumer</i> ).             | Salvin-Godman Coll.       |
| <i>b'' f'</i> . Ad. et juv. sk.              | Cozumel Island ( <i>G. F. Gaumer</i> ).                                  | Salvin-Godman Coll.       |
| <i>m'', n''</i> . Ad. sk.                    | Ruatan Island ( <i>G. F. Gaumer</i> ).                                   | Salvin-Godman Coll.       |
| <i>o''</i> . Ad. sk.                         | Cayo, Western District, British Honduras, May 20 ( <i>F. Blaneaux</i> ). | Salvin-Godman Coll.       |
| <i>p''</i> . Ad. sk.                         | Chiapam, Guatemala ( <i>O. Salvin</i> ).                                 | Salvin-Godman Coll.       |
| <i>q''</i> . ♂ ; <i>r'', s''</i> . ♀ ad. sk. | Atitlan, Guatemala (5000 ft.), Dec. ( <i>W. B. Richardson</i> ).         | Salvin-Godman Coll.       |
| <i>t''-y''</i> . Ad. et juv. sk.             | Lake of Dueñas, July, Sept. ( <i>O. Salvin</i> ).                        | Salvin-Godman Coll.       |
| <i>z''</i> . ♀ ad. sk.                       | Momotombo, Nicaragua, May 23 ( <i>W. B. Richardson</i> ).                | Salvin-Godman Coll.       |
| <i>a³</i> . Ad. sk.                          | San Carlos, Nicaragua, May 23 ( <i>W. B. Richardson</i> ).               | Salvin-Godman Coll.       |
| <i>b³</i> . Ad. sk.                          | Costa Rica ( <i>J. Carmiol</i> ).                                        | Salvin-Godman Coll.       |
| <i>c³</i> . Ad. sk.                          | Costa Rica ( <i>Endres</i> ).                                            | Tweeddale Coll.           |
| <i>d³</i> . ♂ ad. sk.                        | Chitra, Veragua ( <i>E. Arcé</i> ).                                      | Salvin-Godman Coll.       |
| <i>e³ y³</i> . Imm. sk.                      | Lion Hill, Panama ( <i>J. McLeannan</i> ).                               | Salvin-Godman Coll.       |
| <i>h³</i> . ♀ ad. sk.                        | Remedios, Antioquia, U.S. Colombia ( <i>T. K. Salmon</i> ).              | Salvin-Godman Coll.       |
| <i>i³ f'</i> . Ad. sk.                       | San Christoval, Cuba ( <i>G. F. Gaumer</i> ).                            | Salvin-Godman Coll.       |
| <i>m³</i> . Ad. sk.                          | Bembe, Cuba ( <i>G. F. Gaumer</i> ).                                     | Salvin-Godman Coll.       |
| <i>n³</i> . Juv. sk.                         | Haiti.                                                                   | Baron Maltzam [P.]        |
| <i>o³</i> . ♂ juv. sk.                       | Moneague, Jamaica.                                                       | Salvin-Godman Coll.       |
| <i>p³</i> . ♂ ad. sk.                        | Metcalf, Jamaica, Sept. 15 ( <i>O. Salvin</i> ).                         | Salvin-Godman Coll.       |
| <i>q³, r³</i> . Ad. sk.                      | West Indies.                                                             | J. Dallas, Esq. [P.]      |
| <i>p³</i> . Ad. sk.                          | Porto Rico ( <i>J. Latimer</i> ).                                        | U.S. National Museum [P.] |
| <i>t³</i> . Ad. sk.                          | St. Croix, April 18.                                                     | Professor Newton [P.]     |
| <i>u³, v³</i> . ♂ ♀ ad. sk.                  | St. Croix, Jan. ( <i>C. S. Wynch: Cory Coll.</i> ).                      | Salvin-Godman Coll.       |
| <i>w³</i> . Ad. sk.                          | Montserrat ( <i>Sturge</i> ).                                            | Salvin-Godman Coll.       |
| <i>x³, y³</i> . ♂ ad. sk.                    | Dominica, Jan., Feb. ( <i>Ramage</i> ).                                  | West Indian Committee.    |
| <i>z³, a⁴</i> . Ad. et juv. sk.              | Santa Lucia ( <i>Semper</i> ).                                           | Salvin-Godman Coll.       |

|                                                                     |                                                                   |                         |
|---------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------|
| <i>b</i> <sup>1</sup> - <i>n</i> <sup>4</sup> . ♂ ♀ ad. et imm. sk. | St. Vincent, Feb., April, May, July, Aug. ( <i>D. W. Smith</i> ). | Salvin-Godman Coll.     |
| <i>o</i> <sup>4</sup> . Ad. sk.                                     | St. Vincent, Jan.                                                 | G. Stephen, Esq. [P.].  |
| <i>p</i> <sup>4</sup> . Imm. sk.                                    | Bequia Island, May 29 ( <i>D. W. Smith</i> ).                     | Salvin-Godman Coll.     |
| <i>q</i> <sup>4</sup> . Imm. sk.                                    | Mustique Island, June 3 ( <i>D. W. Smith</i> ).                   | Salvin-Godman Coll.     |
| <i>r</i> <sup>4</sup> . ♂ ad. sk.                                   | St. Lucy, Barbados, June 6.                                       | Colonel Feilden [P.].   |
| <i>s</i> <sup>4</sup> . Juv. sk.                                    | Barbados, June.                                                   | Colonel Feilden [P.].   |
| <i>t</i> <sup>4</sup> . Ad. sk.                                     | Barbados.                                                         | Sir R. Schomburgk [C.]. |
| <i>u</i> <sup>4</sup> - <i>z</i> <sup>4</sup> . Ad. sk.             | Grenada, March to Aug. ( <i>D. W. Smith</i> ).                    | Salvin-Godman Coll.     |
| <i>a</i> <sup>5</sup> . Sternum.                                    | Jamaica.                                                          | Gosse Coll.             |

## 22. TIGRORNIS.

*Range.* Confined to West Africa.

1. *Tigrornis leucolopha*.

*Tigrisoma leucolophum*, *Jardine, Ann. & Mag. Nat. Hist.* xvii. p. 86 (1846: Old Calabar); *Bp. Consp.* ii. p. 157 (1855); *Hartl. Orn. W.-Afr.* p. 225 (1857: Rio Boutry: Gaboon); *Gray, Hand-l. B.* iii. p. 33, no. 10170 (1871); *Sharpe & Bouvier, Bull. Soc. Zool. France*, i. p. 313 (1876: R. Louemba, Congo); *Oust. Bull. Soc. Philom.* (7) i. p. 107 (1877: Lambaréné, Gaboon); *id. Nouv. Arch. Mus.* (2) ii. p. 119 (1879); *Bocage, Orn. Angola*, p. 449 (1881).

*Botaurus leucolophus*, *Gray, Gen. B.* iii. App. p. 25 (1849); *Hartl. J. f. O.* 1854, p. 292; *Reichen. J. f. O.* 1877, p. 251; *Büttik. Notes Leyden Mus.* vii. p. 240 (1885), viii. p. 266 (1886: Messurado River, Liberia), x. p. 101 (1888), xi. p. 136 (1889).

*Ardea leucolopha*, *Schl. Mus. Pays-Bas, Ardeæ*, p. 50 (1863: Gold Coast).

*Botaurus (Tigrisoma) leucolophus*, *Reichen. J. f. O.* 1877, p. 12 (Loango Coast).

*Adult.* General colour above greenish black, banded with sandy buff, the light bars on the wing-coverts conspicuously broader, the darker bars with a greenish or purplish reflection; bastard-wing, primary-coverts, and quills greenish black, with white tips, the secondaries barred with sandy buff on the outer web and with white on the inner web; lower back and rump dusky black, with arrow-head markings of sandy buff or yellow; upper tail-coverts and tail-feathers greenish black, with five sandy-buff or white bars, besides the white tip; head black, with a few small bars of buff, and with a patch of white elongated plumes on the nape; sides of face and sides of neck barred with black and sandy buff, as also the throat; the chin white, but with black bars; the centre of the throat vinous with small black bars or spots; the sides of the fore-neck and the under surface of the body vinous brown, with longitudinal white centres to the feathers, and black spots on both webs, becoming almost obsolete on the abdomen and not very distinct on

the under tail-coverts; sides of body and flanks barred with black and sandy buff like the upper surface; under wing-coverts yellowish buff mottled with black, the lower series pure white; axillaries barred with black and buff like the sides of the body: "bill greenish brown, paler towards the base; lower mandible and bare space round the eye yellowish; feet yellowish brown; iris sulphur-yellow" (*J. Büttikofer*). Total length 28 inches, culmen 4.4, wing 10.7, tail 4.6, tarsus 3.4.

Mr. Büttikofer says that a young bird procured by him in Liberia was coloured exactly like the old birds, and had also the white patch on the nape.

*Hab.* West Africa from Liberia to the Congo.

- a. Ad. sk.      Denkera, Gold Coast (*H. T. Shelley Coll.*  
                                *Uncher*).  
b. Ad. sk.      River Ogowé, Gaboon.      *H. T. Ansell, Esq. [P.]*

### 23. ZONERODIUS.

Type.

*Zonerodius*, *Salvad. Ann. Mus. Civic. Genov.* xviii.  
p. 336 (1882)..... *Z. heliosylus*.

*Range.* Confined to Papuasia.

#### 1. *Zonerodius heliosylus*.

- Héron phaeton*, *Less. Voy. Coquille, Zool. Atlas*, pl. 44 (1826).  
*Ardea heliosylus*, *Lesson, Voy. Coquille, Atlas*, i. p. 722 (1826-28);  
*Schl. Mus. Pays-Bas, Ardeæ*, p. 51 (1863); *Finsch, New-Guinea*, p. 183 (1865); *Rosenb. Reist. naar Geelvinkb.* pp. 84, 118 (1875); *id. Malay. Arch.* p. 563 (1878-79).  
*Tigrisoma heliosylus*, *Less. Traité*, p. 572 (1832); *id. Compl. Buff.* p. 693 (1838); *Sharpe, Journ. Linn. Soc.* xiii. p. 321 (1877: Aleva); *Salvad. Ann. Mus. Genov.* xiv. p. 133 (1879); *Ramsay, Proc. Linn. Soc. N. S. W.* iii. p. 300 (1878), iv. p. 102 (1880: Port Moresby); *D'Albert. Nuova Guinea*, p. 588 (1880); *Sharpe, Journ. Linn. Soc., Zool.* xvi. p. 447 (1882: Sogeri district).  
*Botaurus heliosylus*, *Gray, Gen. B.* iii. p. 557 (1847); *Reichenb. Grall.* tab. 150, fig. 508 (1848); *Bp. C. R.* xl. p. 223 (1855); *id. Consp.* ii. p. 136 (1855); *Sclater, Journ. Linn. Soc.* ii. p. 169 (1858); *Gray, P. Z. S.* 1858, p. 197, 1859, p. 159; *id. Cat. B. New Guinea*, pp. 51, 62; *id. P. Z. S.* 1861, p. 438; *Rosenb. N. T. D.* xxv. p. 253 (1863); *id. J. f. O.* 1864, p. 130; *Gray, Hand-l. B.* iii. p. 32, no. 10166 (1871).  
*Botaurus phaethon*, *Less., Reichen. J. f. O.* 1877, p. 247.  
*Zonerodius heliosylus*, *Salvad. Ann. Mus. Genov.* xviii. p. 336 (1882); *id. Orn. Papuasia*, iii. pp. 368, 565 (1882: Dorey; Sorong; Andai; Lobo; Fly River; Aleva; Pt. Moresby); *id. Ann. Mus. Genov.* (2) ix. p. 591 (1890: Rigo); *Heine & Reichen. Nomencl. Mus. Hein.* p. 309 (1890); *Salvad. Agg. Orn. Papuasia*, iii. p. 207 (1891).

*Adult male.* General colour above black, barred with sandy buff, a little paler on the wing-coverts; bastard-wing, primary-coverts, and quills black, spotted on the outer web and barred on the inner



web with yellowish buff or white; quills with white bars on the inner web, often broken up into spots, the innermost secondaries with sandy-buff bars like the back; lower back and rump white, with dusky edges to some of the feathers, the upper tail-coverts with blackish bars near the ends; tail-feathers black, with six bars of sandy buff as well as a narrow tip of the same colour; crown of head and nape black; sides of face barred with black and buff, whiter on the cheeks; a nuchal crest black, with narrow bars of sandy buff; a frill down the sides of the neck consisting of broad bands of sandy buff; chin and upper throat white; lower throat, fore-neck, and breast broadly banded with black and sandy buff, the bars a little narrower on the plumes of the chest; lower breast and abdomen white, washed with sandy buff at the ends of the feathers, the flanks more strongly washed with this colour; under wing-coverts and axillaries white, washed with sandy buff: "bill black, whitish towards the base; feet brownish green; iris greenish yellow" (*D'Albertis*). Total length 21 inches, culmen 3.1, wing 11, tail 4.6, tarsus 3.3.

*Hab.* New Guinea and Salawati, and probably the Aru Islands.

|              |                                            |                     |
|--------------|--------------------------------------------|---------------------|
| a. Ad. st.   | New Guinea.                                | Purchased.          |
| b. ♂ ad. sk. | Salawati.                                  | Wallace Coll.       |
| c. Ad. sk.   | [Aru Islands ( <i>J. T. Cockerell</i> ).]* | Salvin-Godman Coll. |

## 24. TIGRISOMA†.

*Tigrisoma*, *Suicins*. *Zool. Journ.* iii. p. 362 (1828) . . . . . Type.  
T. lineatum.

*Range.* South America from Guiana, Colombia, and Ecuador to Southern Brazil, Argentina, and Peru.

### Key to the Species.

- a. With transverse bars on the flanks and axillary feathers, very distinct.
  - a'. Head and neck chestnut, with a few dusky bars occasionally (adults), or tawny buff barred with black (young); cheeks bare to below the eye; tail uniform.
  - a''. Breast and abdomen uniform, not transversely barred.
  - a'''. Axillaries black, with broad bands of white; vermiculations on upper surface coarse . . . . . *lineatum*, p. 194.
  - b''. Axillaries dark slaty, with fine cross-bars of white; vermiculations on upper surface very fine . . . . . *marmoratum*, p. 195.

\* This specimen was sold by Mr. Cockerell as a "new species" from Thirsty Sound near Port Bowen in Queensland. As all the other supposed "new" species discovered by Mr. Cockerell proved to have come from the Aru Islands, it is safe to suppose that this Tiger Bittern is also from the latter locality.

† *TIGRISOMA EXCELLENS*, Ridgw. *Proc. U.S. Nat. Mus.* x. p. 595 (1887).

*Hab.* Costa Rica and Honduras.

This species has not been seen by me: it is said to be allied to *T. lineatum*.

- δ". Breast and abdomen broadly banded across  
 with dusky brown and buff ..... *bahia*, p. 196.  
 δ'. Head and neck black, with tawny-buff bars  
 or spots; cheeks with a feathered patch  
 extending forwards below the eye ..... *fasciatum*, p. 196.  
 δ. With no bars on the flanks and axillaries, which  
 are perfectly uniform, or have only a few  
 white spots; head black (in adult), black  
 barred with buff (young) ..... *salmoni*, p. 197.

### 1. *Tigrisoma lineatum*.

- ? Le Héron de Brésil, *Briss. Orn.* v. p. 441 (1760).  
 Le Butor de Brésil, *Briss. t. c.* p. 460.  
 ? *Ardea brasiliensis*, *Linn. Syst. Nat.* i. p. 239 (1766); *Gm. Syst. Nat.* i. p. 637 (1788); *Lath. Ind. Orn.* ii. p. 681 (1790).  
 L'Honoré de Cayenne, *D'Aubent. Pl. Enl.* viii. pl. 790 (juv.).  
 L'Onoré rayé de Cayenne, *D'Aubent. Pl. Enl.* viii. pl. 860 (adult).  
 Onoré, *Buff. Hist. Nat. Ois.* vii. p. 481 (1780).  
 Onoré rayé, *Buff. t. c.* p. 432.  
*Ardea cocoi* (nec *Linn.*), *Bodd. Tabl. Pl. Enl.* p. 49 (1783).  
*Ardea lineata*, *Bodd. Tabl. Pl. Enl.* p. 52 (1783); *Gm. Syst. Nat.* i. p. 638 (1788); *Lath. Ind. Orn.* ii. p. 682 (1790).  
 ? Brazilian Bittern, *Lath. Gen. Syn.* iii. pt. 1, p. 62 (1785).  
 Tiger Bittern, *Lath. t. c.* p. 63.  
 Lineated Bittern, *Lath. t. c.* p. 64.  
*Ardea tigrina*, *Gm. Syst. Nat.* i. p. 638 (1788); *Lath. Ind. Orn.* ii. p. 682 (1790); *Burm. Th. Bras.* iii. p. 410 (1856); *Tschudi, Faun. Peruan., Aves*, pp. 50, 297 (1840).  
*Ardea flava*, *Gm. Syst. Nat.* i. p. 638 (1788: *ex Briss.*); *Lath. Ind. Orn.* ii. p. 682 (1790).  
*Ardea soco*, *Wagl. Syst. Av.*, *Ardea*, sp. 30, p. 186 (1827).  
*Tigrisoma tigrinum*, *Swains. Zool. Journ.* iii. p. 362 (1828); *Gray, List Grall. Brit. Mus.* p. 81 (1844); *id. Gen. B.* iii. p. 556 (1847); *Cab. in Schomb. Reis. Guian.* iii. p. 753 (1848); *Bp. Conspect. Av.* ii. p. 137 (1855); *Sci. P. Z. S.* 1855, p. 163 (Bogota), 1857, p. 268 (Rio Javari), 1860, p. 290 (Babahoyo); *Lawr. Ann. Lyc. N. Y.* viii. p. 12 (1867; Panama).  
*Ardea brasiliensis*, *Neuwied, Beitr. Naturg. Bras.* iv. p. 642 (1832); *Burm. Th. Bras.* iii. p. 410 (1856); *Schl. Mus. Pays-Bas, Ardeæ*, p. 52 (1863); *Finsch, P. Z. S.* 1870, p. 589 (Trinidad).  
*Tigrisoma brasiliense*, *Gray, List Grall. Brit. Mus.* p. 81 (1844); *id. Gen. B.* iii. p. 556 (1847); *Cab. in Schomb. Reis. Guian.* iii. p. 754 (1848); *Sci. P. Z. S.* 1857, p. 268 (Rio Javari), 1860, p. 72 (Pallatanga); *Lawr. Ann. Lyc. N. Y.* vii. p. 301 (1862); *Sci. & Salv. P. Z. S.* 1864, p. 371 (Panama), p. 461 (Gualaquiza), 1866, p. 199 (Ucayali); *Léot. Ois. Trinid.* p. 426 (1866); *Sci. & Salv. P. Z. S.* 1867, p. 979 (Pebas); *id. Ex. Orn.* p. 184 (1869); *Gray, Hand-l. B.* iii. p. 32, no. 10167 (1871); *Fels. Orn. Bras.* pp. 302, 456 (1871: Taipa, Nov.; Ypanema, Feb. to Aug.; Ourytiba, Ponte Alta, Rio Araguay, Oct.; Engenho do Pari, June; Caiçara, March; Barra do Rio Negro); *Sci. & Salv. P. Z. S.* 1873, p. 305 (Cashiboys, Santa Cruz, Upper Amazon); *id. Nomencl. Av. Neotr.* p. 125 (1873); *Tacz. & Berl. P. Z. S.* 1885, p. 119; *Tacz. Orn. Pérou*, iii. p. 401 (1886: Lambayeque); *Berl. J. f. O.* 1884, p. 320 (Lake Paturia, U.S. Colombia), 1889, p. 318 (Yurimaguas); *Riker & Chapm. Auk*, viii. p. 161

(1891: Santarem); *Chapm. Bull. Amer. Mus.* vi. p. 82 (1894: Trinidad).

*Botaurus brasiliensis*, *Reichen. J. f. O.* 1877, p. 250.

*Adult.* Above olive-brown with a greenish tinge, the feathers coarsely barred and mesially streaked with black; lower back, rump, and upper tail-coverts blackish, with a slight green gloss and a few cross-vermiculations of sandy buff; wing-coverts like the back, the greater series rather more finely vermiculated than the other coverts; bastard-wing, primary-coverts, and quills black, externally slate-colour, and edged with white at the tip, the secondaries glossed with green and having small vermiculations of sandy buff, the innermost like the back; tail uniform slaty grey, with a greenish gloss; entire head and neck chestnut, the latter with remains of spots and bars of blackish; sides of face and ear-coverts also chestnut; middle of throat with dusky rufous feathers; the lores, region of the eye, and sides of throat bare, with a line of white feathers skirting the latter, streaked with black; lower throat and fore-neck for the most part chestnut, with broad streaks of white and narrower marginal ones of black, the sides of the chest rayed with blackish bars; breast and abdomen uniform rufous, mixed with grey, the bases of the feathers being grey; thighs and under tail-coverts dusky grey, washed with rufous; under wing-coverts, axillaries, and long flank-feathers black, with broad white bars, very conspicuous; quills uniform slaty below. Total length 20 inches, culmen 4, wing 10.5, tail 3.8, tarsus 3.8.

*Young.* Black, spotted with tawny buff like the young of the other species of Tiger Bittern described below.

*Hab.* British Guiana and Amazonia generally to Peru, Ecuador, and north to Panama; Trinidad.

|                             |                                                       |                            |
|-----------------------------|-------------------------------------------------------|----------------------------|
| a. Ad. st.                  | British Guiana.                                       | Sir R. Schomburgk<br>[C.]. |
| b, c. Ad. et juv.<br>sk.    | British Guiana.                                       | Sir R. Schomburgk<br>[C.]. |
| d. ♂ ad. sk.                | Merumé Mts., British Guiana<br>( <i>H. Whitely</i> ). | Salvin-Godman Coll.        |
| e, f. Ad. et juv.<br>sk.    | Maroni River, Surinam<br>( <i>Kappler</i> ).          | Salvin-Godman Coll.        |
| g. Ad.; h. Juv.<br>sk.      | Isthmus of Panama ( <i>McLean-</i><br><i>nan</i> ).   | Salvin-Godman Coll.        |
| i, k, l. Ad. et juv.<br>sk. | Sarayacu, Ecuador ( <i>C. Buck-</i><br><i>ley</i> ).  | Salvin-Godman Coll.        |
| m, n. Juv. sk.              | Yanayacu, Ecuador ( <i>C. Buck-</i><br><i>ley</i> ).  | Salvin-Godman Coll.        |
| o, p. ♂ ad. et juv.<br>sk.  | Pebas, E. Peru ( <i>J. Haurweil</i> ).                | Salvin-Godman Coll.        |
| q, r. Skeletons.            |                                                       | Zoological Society.        |

## 2. *Tigrisoma marmoratum*.

*Garza jaspeada*, *Azara, Apunt.* iii. p. 160 (1805), juv.

*Garza obscuro azulada*, *Azara, Apunt.* iii. p. 164 (1805), ad.

*Ardea marmorata*, *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 415 (1817).

- Ardea tigrina* (nec Gm.), *Hartl. Ind. Azara*, p. 22 (1847).  
*Ardea brasiliensis* (nec L.), *Hartl. Ind. Azara*, p. 22 (1847).  
*Tigrisoma brasiliense* (nec Linn.), *White, P. Z. S.* 1882, p. 624 (Rio Parana, near Corrientes, Aug.).  
*Tigrisoma fasciatum* (nec Such), *Salvin, Ibis*, 1880, p. 368 (Salta).  
*Tigrisoma marmoratum*, *Berl. J. f. O.* 1887, pp. 30, 123 (Pilcomayo; Gran Chaco); *Scl. & Huds. Argent. Orn.* ii. p. 104 (1889).

*Adult female.* Similar to *T. lineatum*, but larger, with the vermiculations on the upper surface much finer, and with the axillaries and long flank-feathers dark slaty grey, narrowly barred with white; "bill black, the under mandible below yellow; feet dark ochraceous; iris and orbital skin primrose-yellow" (*H. Durnford*). Total length 28 inches, culmen 4, wing 13·4, tail 5·2, tarsus 4·4.

Count von Berlepsch is quite right in his identification of the Salta specimen, collected by Mr. Durnford, which is now in the British Museum; and, as he has got specimens of the same bird from Paraguay, there can be little doubt that they belong to the species described by Azara and called *Ardea marmorata* by Vieillot. The Salta specimen has the feathers slightly advanced on the cheeks, but not so much as in *A. fasciatum*, and I find that there is a considerable difference in specimens as regards this character.

*Hab.* Paraguay to the interior of the Argentine Republic.

α. ♀ ad. sk.                      Salta, June 28.                      H. Durnford, Esq. [C].

### 3. *Tigrisoma bahia*. (Plate II. A.)

*Tigrisoma tigrinum* (nec Gm.), *Bp. Consp.* ii. p. 556 (1855).

*Adult.* Similar to *T. lineatum*, but distinguished by the breast and abdomen being regularly barred with dusky brown or blackish, the bands being very broad and equal in width to the rufous interspaces. Total length 24 inches, culmen 4·2, wing 10·8, tail 4·2, tarsus 4.

It is somewhat surprising that I cannot find any name for this apparently very distinct bird, nor does it appear to have been noticed by any ornithologist, though Bonaparte has taken his description of *T. brasiliense* from a specimen of *T. bahia*. The references to all the Tiger Bitterns of Brazil are more or less confused, and the synonymy is very difficult to unravel.

*Hab.* Eastern Brazil.

α. Ad. sk.                      Bahia (*Dr. Luschath*).                      Salvin-Godman Coll.

### 4. *Tigrisoma fasciatum*.

- Tigrisoma fasciatum*, *Such, Zool. Journ.* ii. p. 117 (1825: Brazil);  
*Wagl. Isis*, 1829, p. 662; *Scl. & Salv. Ex. Orn.* pl. xcii. (1869); *id.*  
*Nomencl. Av. Neotr.* p. 126 (1873).  
*Ardea lineata* (nec Gm.), *Newied, Beitr. Naturg. Bras.* iv. p. 634  
 (1832); *Schl. Mus. Pays-Bas, Ardeæ*, p. 53 (1863: Brazil).  
*Botaurus fasciatus*, *Reichen. J. f. O.* 1877, p. 250.

*Adult male.* General colour above blackish with a gloss of olive-green, varied with complete or interrupted bars of sandy buff; lower back, rump, and upper tail-coverts dusky blackish, with more or less distinct white bars; wing-coverts like the back, the greater series vermiculated with sandy buff on their outer edges; bastard-wing, primary-coverts, and quills black, externally slaty grey, notched with rufous or white spots and tipped with white; the secondaries with interrupted white bars, the innermost like the back; tail-feathers slaty black, glossed with green, tipped with white, the outer ones with interrupted white bars; crown of head and neck black, plentifully barred with sandy buff; sides of face, ear-coverts, and cheeks black, mottled with buff spots; fore part of cheeks with a patch of white feathers extending forwards beyond the line of the eye; sides of throat bare, like the lores; centre of throat feathered, white; remainder of throat white, broadly streaked with pale brown and light rufous, the lateral feathers barred with black and white down the sides of the neck and the sides of the fore-neck; remainder of breast and abdomen pale tawny rufous, with a few obsolete bars of blackish; the sides of the body, flanks, and under wing-coverts and axillaries slaty black, barred distinctly with white; quills ashy below, notched and barred with white on the inner web. Total length 28 inches, culmen 3·5, wing 12·5, tail 5·1, tarsus 3·65.

*Young.* Black, with large spots and bars of tawny rufous; lower back, rump, upper tail-coverts, and tail black, barred with white; crown of head and neck deep foxy rufous, barred with black; wing-coverts barred like the back; quills as in the adult, the innermost secondaries like the back; sides of face pale tawny, with scarcely any black markings; throat white; lower throat and neck and sides of chest tawny buff, with black bars; remainder of under surface of body white, with a few black bars; sides of body and flanks black, barred with white; under tail-coverts white, with a black bar at the tip; under wing-coverts and axillaries slaty black, barred with white.

*Hab.* S.E. Brazil.

a. ♂ ad.; b. Juv. sk.  
c. Juv. sk.  
d. Juv. sk.

Rio de Janeiro.  
Brazil.  
[S. America.]

Alex. Fry, Esq. [P].  
J. Gould, Esq.  
Lieut. Maw [P].

## 5. *Tigrisoma salmoni*.

*Tigrisoma fasciatum* (*nec Such*), *Gray, Hand-l. B.* iii. p. 32, no. 10168 (1871).

*Tigrisoma salmoni*, *Scl. & Salv. P. Z. S.* 1875, p. 38 (Medellin); *Tacz. P. Z. S.* 1879, p. 242 (Tambillo); *Scl. & Salv. t. c.* p. 542 (Antioquia); *Tacz. P. Z. S.* 1880, p. 212 (Callacate, May), 1882, p. 47 (Huambo); *Berl. & Tacz. P. Z. S.* 1883, p. 577 (Chimbo, W. Ecuador); *Tacz. Orn. Pérou*, iii. p. 402 (1886: Huambo, Tambillo, Callacate).

*Botaurus salmoni*, *Reichen. J. f. O.* 1877, p. 251.

*Adult male* (type of species). Blackish brown above, plentifully and finely barred with sandy buff, a little more broadly on the neck; wing-coverts like the back, the greater series freckled minutely with whitish; bastard-wing, primary-coverts, and quills black, externally slaty grey, tipped with white; the inner secondaries like the back; tail slaty black, glossed with green; crown of head and nuchal crest black; sides of face grey, with a few sandy-buff cross-bars; cheeks grey, with a black line extending from below the eye down the sides of the neck and skirting the upper throat, which is bare; centre of throat feathered, white; centre of lower throat and fore-neck broadly streaked with white and rufous, and laterally with black; remainder of under surface pale rufous, lighter on the abdomen; axillaries, sides of body, and flanks uniform slaty grey; the wing-coverts white, with dusky bases to the feathers; sides of the upper breast greenish black, with fine lines of tawny buff: "iris yellow" (*T. K. Salmon*). Total length 27 inches, culmen 3.1, wing 11, tail 4.

This species is easily recognized by its uniform grey flanks, but it seems to have a young plumage of tawny and black, like the other Tiger Bitterns. There is also another stage, more rufous than the one described, and with the head not black, but barred with rufous and black like the back.

*Hab.* Colombia to Ecuador and Peru.

|                                     |                                                           |                                           |
|-------------------------------------|-----------------------------------------------------------|-------------------------------------------|
| <i>a.</i> ♂ ad.; <i>b.</i> Juv. sk. | Cauca Valley, U.S. Colombia<br>( <i>T. K. Salmon</i> ).   | Salvin-Godman Coll.<br>(Type of species.) |
| <i>c, d.</i> Ad. et juv. sk.        | Medellin ( <i>T. K. Salmon</i> ).                         | Salvin-Godman Coll.                       |
| <i>e.</i> ♂ ad. sk.                 | Minca, U.S. Colombia, Jan. 22<br>( <i>F. A. Simons</i> ). | Salvin-Godman Coll.                       |
| <i>f.</i> Ad. sk.                   | Sarayacu, Ecuador ( <i>C. Buckley</i> ).                  | Salvin-Godman Coll.                       |
| <i>g.</i> Ad. st.                   | South America.                                            | Old Coll.                                 |

## 25. HETEROCNUS.

*Range.* Central America from Mexico to Panama.

### 1. *Heterocnus cabanisi*.

*Tigrisoma tigrinum* (*nec Gm.*), *Scl. P. Z. S.* 1858, p. 359 (Tigré Isl., Honduras); *G. C. Taylor, Ibis*, 1859, p. 151 (Honduras); *Scl. & Salv. t. c.* p. 226; *Scl. P. Z. S.* 1860, p. 253 (Orizaba); *Salvin, Ibis*, 1865, p. 191 (Guatemala).

*Tigrisoma brasiliense* (*nec L.*), *Moore, P. Z. S.* 1859, p. 63 (Aloor R.; Omoa. resident).

*iii.* *Heine, J. f. O.* 1859, p. 407; *Scl. & Salv. P. Z. S.* (equitia); *iid. Ex. Orn.* p. 95, pl. xlviii. (1868); *N. Y.* ix. p. 142 (1870: Costa Rica); *Salv.* 18 (Laguna del Castillo, Veragua); *Lawr. Bull.* p. 49 (1875: Tehuantepec; Puebla); *Scl. Neotr.* p. 125 (1873); *Nutting, Proc. U.S.* 1882: Gulf of Nicoya, Costa Rica), vi.

p. 379 (1883: San Juan del Sur); *Ferrari-Perez, op. cit.* ix. p. 170 (1886: Vera Cruz); *Jouy, op. cit.* xvi. p. 788 (1893: San Luis Potosi).

*Ardea cabanisi*, *Schl. Mus. Pays-Bas*, Ardeæ, p. 51 (1863: Mexico).  
*Botaurus cabanisi*, *Reichen. J. f. O.* 1877, p. 251.

**Adult male.** General colour above brown, the feathers having a mesial shaft-line of black, and finely marked with wavy cross-lines of buff and grey and black, arranged on a transverse pattern, consisting of an ashy or dusky bar, bordered above and below with a narrow line of black, and then a broader line of sandy buff; this wavy character extends over the whole of the plumage of the upper surface, but the bands become obsolete on the inner secondaries, where the barring becomes broken up into minute freckles; wing-coverts like the back, but the cross-barring a little coarser, except on the greater coverts, where it is very fine; bastard-wing and primary-coverts blackish, fringed with white at the ends, and having a few white bars on the outer web of the former series; quills black, externally slaty grey, tipped with white; secondaries glossed with greenish and externally freckled with brown vermiculations on the outer webs, increasing towards the innermost, which are freckled all over; lower back, rump, and upper tail-coverts dusky slate-colour; tail-feathers dark slate-colour, some of the feathers finely lined with whitish vermiculations and cross-markings; crown of head and crest black; lores and orbits bare; sides of face and ear-coverts slaty blue, extending to the sides of the nape, and separated from the bare cheeks by a line of black, which is continued down the sides of the bare throat, but is streaked with white in the neighbourhood of the latter; nape, hind-neck, and sides of neck sandy buff, barred with black, forming an ample neck-frill, which extends down to the sides of the chest; the centre of the lower throat and fore-neck distinctly lighter and mottled with white, ashy, rufous-brown, and black, the lateral feathers of the frill having a good deal of black on the outer web, so as to continue the black streak which runs along the sides of the bare throat; the central feathers of the throat for the most part white, then becoming laterally tinged with isabelline or buff, and externally blackish at the base and reddish towards the end of the feathers; some of the lower feathers of the fore-neck with a long black streak down the centre, the inner webs white, the outer ones barred like the adjoining frill; centre of breast bare, overhung by lateral tufts of vinous chestnut, the rest of the under surface of the body being of the latter colour; the flanks slaty grey; the thighs dusky slate-colour, on the inner face pale vinous; under tail-coverts slaty grey, washed with rufous; under wing-coverts slaty brown, barred with white, the smaller ones with sandy buff; axillaries slaty grey: "upper mandible black, the lower one greenish yellow; orbits, lores, gular sac, and feet greenish; iris yellow" (*F. Sumichrast*). Total length 27 inches, culmen 4.2, wing 13, tail 5, tarsus 4.2.

**Adult female.** Similar to the male in colour. Total length of out-stretched skin 30 inches, culmen 4, wing 13.3, tail 5.7, tarsus 3.5.



*Young.* Entirely different from the adults. Blackish brown above, broadly barred with sandy buff, most of the bars being continuous, some separated by the middle of the feather intervening; lower back, rump, and upper tail-coverts slaty black, barred with white; tail slaty black, crossed with six narrow white bands, including the one at the tip; wing-coverts like the back, and banded in the same manner, the bars on the inner webs of the greater coverts inclining to white; quills slaty black, the secondaries browner, the primaries with ashy-white bars on the inner web, and white or yellowish-white spots on the outer one, the secondaries barred with sandy buff on the outer web.

*Hab.* Central America, from Mexico to Panama.

|                                   |                                                        |                                   |
|-----------------------------------|--------------------------------------------------------|-----------------------------------|
| a, b. ♂ ♀ ad.; c, d. ♂ ♀ imm. sk. | Presidio, Mexico, Feb. (A. Forrer).                    | Salvin-Godman Coll.               |
| e. Ad. sk.                        | San Blas, Tepic, May (W. B. Richardson).               | Salvin-Godman Coll.               |
| f, g, h. Ad. sk.                  | Nuevo Leon, April (F. B. Armstrong).                   | Salvin-Godman Coll.               |
| i. Juv. sk.                       | Tamaulipas (W. B. Richardson).                         | Salvin-Godman Coll.               |
| k. ♂ ad. sk.                      | Tampico, June (W. B. R.).                              | Salvin-Godman Coll.               |
| l. ♀ juv. sk.                     | Sierra Madre, above Ciudad Victoria, April (W. B. R.). | Salvin-Godman Coll.               |
| m, n. ♀ imm. sk.                  | Vega del Casadero, Vera Cruz, Dec. (M. Trujillo).      | Salvin-Godman Coll.               |
| o. ♀ ad. sk.                      | Mizantla, Nov. (Ferrari-Perez).                        | Salvin-Godman Coll.               |
| p. ♂ imm. sk.                     | Tizimin, N. Yucatan, March (G. F. Gaumer).             | Salvin-Godman Coll.               |
| q. Ad.; r, s. Juv. sk.            | Cozumel Isl. (G. F. Gaumer).                           | Salvin-Godman Coll.               |
| t. Juv. sk.                       | Belize, British Honduras (F. Blancaneaux).             | Salvin-Godman Coll.               |
| u. Ad.; v. Juv. sk.               | Chiapam, Guatemala, Jan. (O. S.).                      | Salvin-Godman Coll.               |
| w. Ad. sk.                        | Juntecholol, Peten, April (O. S.).                     | Salvin-Godman Coll.               |
| x. ♀ ad. sk.                      | Costa Rica (J. Carmiol).                               | Salvin-Godman Coll.               |
| y. Juv. sk.                       | Chontales, Nicaragua (T. Belt).                        | Salvin-Godman Coll.               |
| z. Imm. sk.                       | Veragua, Panama (E. Arce).                             | Salvin-Godman Coll.               |
| a'. Juv. sk.                      | Panama (McLeannan).                                    | Salvin-Godman Coll.               |
| b'. Ad. st.                       | Panama.                                                | Capt. Kellett & Lieut. Wood [P.]. |

## 26. ERYTHROCNUM.

Type.

*Erythrocnus*, Sharpe, *Bull. Brit. Orn. Club*, iii. p. xxxix (1894) ..... *E. rufiventris*.

*Range.* Confined to Africa.

### 1. *Erythrocnus rufiventris*.

*Ardea rufiventris*, Sundev. *Öfvers. K. Vet.-Akad. Förh. Stockh.* 1850, p. 110; Layard, *Ibis*, 1871, p. 105 (St. Lucia Bay); Ayres, *l. c.*

p. 265, pl. ix. (Transvaal); *Gray, Hand-l. B.* iii. p. 30, no. 10137 (1871); *Gurney in Anderss. B. Dam. Ld.* p. 287 (1872: Okavango; Teoughe; Lake Ngami); *Reichen. J. f. O.* 1877, p. 256; *Ayres, Ibis*, 1880, p. 269 (Transvaal); *Bocage, Orn. Angola*, p. 441 (1881: Humbe); *Holub & Pelz. Beitr. Orn. Südaf.* p. 273 (1882); *Ayres, Ibis*, 1886, p. 294 (Limpopo R.).

*Ardea semirufa*, *Schl. Mus. Pays-Bas, Ardeæ*, p. 35 (1863); *Gray, Hand-l. B.* iii. p. 30, no. 13142 (1871).

*Butorides rufiventris*, *Sharpe in Oates's Matabele Land*, App. B, p. 327 (1881: Hendrik's Vley).

*Ardeola rufiventris*, *Reichen. JB. Hamb. Wissensch. Anst.* x. p. 8 (1893: Quilimane).

*Erythrocnus rufiventris*, *Sharpe, Bull. B. O. Club*, iii. p. xxxix (1894).

*Adult male in breeding-plumage.* General colour above black, with a distinct wash of bluish slate on the long scapulars, crest-feathers, and neck; lower back, rump, upper tail-coverts, and tail rich chestnut; wing-coverts deep maroon, those along the bend of the wing tipped with grey; bastard-wing, primary-coverts, and quills black, powdered externally with slate-grey; secondaries dark maroon, with the greater part of the outer webs and the innermost secondaries like the back; head and neck all round black, especially on the crown and throat, the other parts shaded with slaty grey, which extends over the breast, leaving the abdomen, thighs, and under tail-coverts, as well as the sides of the body, axillaries, and under wing-coverts, deep maroon; lower primary-coverts and quill-lining ashy grey: "basal half of bill nearly white, remainder black, with the tip of the under-mandible yellow; bare skin round the eye yellow; feet and bare part of thighs yellow; tarsi pale; iris bright yellow" (*T. Ayres*). Total length 17·5 inches, culmen 2·3, wing 8·5, tail 2·9, tarsus 2·15.

*Young.* Much duller and browner than the adult, and the rufous colour very much paler; throat yellowish buff as well as the centre of the fore-neck, the mesial streak being broken up into mottlings.

*Hab.* South Africa from British Caffraria to Natal and the Transvaal to the Zambesi, and westward to Lake Ngami and the Okavango and Cunene Rivers.

|                |                                               |                                  |
|----------------|-----------------------------------------------|----------------------------------|
| a, b. Ad. sk.  | Kingwilliamstown.                             | Major Traveledyan [P.].          |
| c. Imm. sk.    | Durban, Natal ( <i>Gordge</i> ).              | Shelley Coll.                    |
| d. ♂ ad. sk.   | Potchefstroom, Transvaal ( <i>T. Ayres</i> ). | Shelley Coll.                    |
| e. Juv. sk.    | Potchefstroom, Dec. ( <i>T. Ayres</i> ).      | Gurney Coll.                     |
| f. ♂ imm. sk.  | Hendrik's Vley ( <i>F. Oates</i> ).           | W. E. & C. G. Oates, Esqs. [P.]. |
| g, h. Imm. sk. | Makalaka Country ( <i>Dr. Bradshaw</i> ).     | Shelley Coll.                    |

## 27. ARDEOLA.

|                                                   |                     |
|---------------------------------------------------|---------------------|
| <i>Ardeola</i> , <i>Boie, Isis</i> , 1822, p. 559 | Type. A. ralloides. |
| <i>Buphus</i> , <i>Boie, Isis</i> , 1826, p. 979  | "A. malaccensis."   |

*Range.* Confined to the Old World, ranging over Temperate



(1889); *Brusina, Motr. etc. (Orn. Croat.)* p. 72 (1890); *Fatio & Studer, Cat. distr. Ois. Suisse*, p. 44 (1892); *Sibree, Ibis*, 1892, p. 116 (Madagascar); *Koenig, J. f. O.* 1893, p. 87 (Tunis); *Meade-Waldo, Ibis*, 1893, p. 198 (Canary Isl.); *Lilford, Col. Fig. Brit. B.* part xxiv. (1893); *Fleck, J. f. O.* 1894, p. 388 (Damara and Great Namaqua Lands); *Irby, Orn. Straits Gibr.* 2nd ed. p. 205 (1895).

*Ardea marsigli, Lépechin, Nov. Comm. Petrop.* xiv. p. 502 (1770).

*Ardea pumila, Lépechin, tom. cit.* p. 502.

*Ardea comata, Pall. Reis. Russ. Reichs*, ii. *Anhang*, p. 715 (1773: Caspian); *id. Zoogr. Rosso-Asiat.* ii. p. 123 (1811); *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 428 (1817); *id. Enc. Méth.* iii. p. 1123 (1823); *Less. Traité d'Orn.* p. 573 (1831); *Gould, B. Eur.* iv. pl. 275 (1837); *Naum. Vög. Deutschl.* ix. p. 120, tab. 224 (1838); *Nordm. in Démid. Voy. Russ. Mérid.* iii. p. 262 (1840); *Mühle, Beitr. Orn. Griechenl.* p. 114 (1844); *Thomps. B. Irel.* ii. p. 158 (1850); *Kjærb. Danm. Fugle, Suppl.* tab. lv. fig. 4 (1851); *Schl. Vog. Nederl.* pl. 192 (1854); *Hartl. Orn. West-Afr.* p. 223 (1857: Gambia; Senegal; Casamanse); *Linderm. Vög. Griechenl.* p. 151 (1860); *Tristr. Ibis*, 1860, p. 163 (Lake Halloula); *Powys, t. c.* p. 346 (Epirus, March; Lake of Scutari, Aug.); *Gray, Cat. Brit. B.* p. 148 (1863); *Schl. Mus. Pays-Bas, Ardeæ*, p. 32 (1863); *Wright, Ibis*, 1864, p. 143 (Malta); *Sperling, t. c.* p. 287 (Mediterranean); *Scl. t. c.* p. 301 (Johanna Isl., Comoros); *Layard, B. S. Afr.* p. 308 (1867); *Schl. & Poll. Faune Madag., Ois.* p. 159 (1868); *Borggr. Vogelf. Norddeutschl.* p. 123 (1869); *Stevens. B. Norf.* ii. p. 151 (1870); *Finsch & Hartl. Vög. Ostaf.* p. 697 (1870); *Gray, Hand-l. B.* iii. p. 30, no. 10134 (1871); *Harting, Handb. Brit. B.* p. 149 (1872); *Heugl. Orn. N.O.-Afr.* ii. Abth i. p. 1074 (1873: Kordofan; Blue and White Niles; Abyssinia); *Ayres, Ibis*, 1873, p. 283 (Potchefstroom); *Hartl. Vög. Madag.* p. 301 (1877); *Pelz. Verhandl. z.-b. Ges. Wien*, xxxi. p. 155 (1881: Lado, March); *Holub & Pelz. Beitr. Orn. Südaf.* p. 274 (1882); *Milne-Edwards & Grandid. Hist. Nat. Madag., Ois.* p. 554 (1882); *Seebohm, Ibis*, 1883, p. 32 (Shores of Caspian); *id. Hist. Brit. B.* ii. p. 486, pl. 38 (1884); *id. Ibis*, 1884, p. 429 (Lenkoran); *Fischer, J. f. O.* 1885, p. 118 (Zanzibar; Kipini); *Sharpe, Ibis*, 1886, p. 491 (Fao); *Emin, Scottish Geogr. Mag.* 1887, p. 276; *Guillem. Ibis*, 1888, pp. 110, 113 (Lanarka, April); *Lilford, Ibis*, 1889, p. 343 (Cyprus, April and May); *Koenig, J. f. O.* 1890, pp. 313, 453 (Madeira); *Madarász, Erläut. Ausst. Ungar. Vogelf.* p. 105 (1891); *Frivaldsky, Av. Hung.* p. 131 (1891).

*Ardea castanea, S. G. Gmelin, Reise Russl.* i. p. 165 (1774); *Gm. Syst. Nat.* i. p. 633 (1788).

Petit Héron roux du Sénégal, *D'Aubent. Pl. Enl.* viii. pl. 315.

Heron huppé de Mahon, *D'Aubent. tom. cit.* pl. 348.

Le Crabier caiot, *Buff. Hist. Nat. Ois.* vii. p. 389 (1780).

Le Guacco, *Buff. tom. cit.* p. 392.

Le Crabier de Mahon, *Buff. tom. cit.* p. 393.

Le Petit Butor de Sénégal, *Buff. tom. cit.* p. 426.

*Ardea grisea (nec Linn.)*, *Bodd. Tabl. Pl. Enl.* p. 19 (1783).

Senegal Bittern, *Lath. Gen. Syn.* iii. pt. 1, p. 67 (1785).

Squaiotta Heron, *Lath. tom. cit.* p. 72.

Squacco Heron, *Lath. tom. cit.* p. 74; *Yarrell, Brit. B.* ii. p. 466 (1843).

Castaneous Heron, *Lath. tom. cit.* p. 75.

- † Red-legged Heron, *Lath. tom. cit.* p. 73.  
*Ardea aquaiotta*, *Gm. Syst. Nat.* i. p. 634 (1788).  
 † *Ardea erythropus*, *Gm. tom. cit.* p. 634.  
*Ardea senegalensis*, *Gm. tom. cit.* p. 645.  
*Ardea botaurulus*, *Schrank, Fauna Boica*, i. p. 221 (1789); *teste Dresser, B. Eur.* vi. p. 251.  
*Ardea griseo-alba*, *Bosc, Act. Soc. Hist. Nat. Paris*, i. no. 59 (1792); *teste Reichen. J. f. O.* 1877, p. 256.  
*Ardea audax*, *Lapeyrouse, Neu schued. Abh.* iii. p. 106 (1794).  
*Ardea deaurata*, *Merrem in Ersch & Grub. Encycl.* v. p. 173 (1820).  
*Ardeola ralloides*, *Boie, Isis*, 1822, p. 559; *Rupp. Syst. Uebers.* p. 121 (1845); *Gigl. Ibis*, 1865, p. 60 (Pisa); *Salvad. Faun. Ital.*, *Ucc.* p. 242 (1871); *Gigl. Iconogr. Avif. Ital.* no. 328; *Salvad. Ann. Mus. Genov.* (2) i. p. 220 (1884: Shoa); *Gigl. Avif. Ital.* p. 282 (1886); *Salvad. Elenco Ucc. Ital.* p. 244 (1886); *Gigl. Avif. Ital.*, 1st *Resoc.* p. 438 (1889); 2nd *Resoc.* p. 645 (1890); 3rd *Resoc.* p. 508 (1891); *Hartert, Ibis*, 1892, p. 512 (E. Prussia); *Dubois, Faun. Ill. Vert. Belg.*, *Ois.* ii. p. 335, pl. 234 (1894); *Reichen. Vog. deutsch-Ost-Afr.* p. 64 (1894: Ugalla; Wualaba; Victoria Nyanza).  
*Buphus comatus*, *Boie, Isis*, 1826, p. 358; *Bp. Consp. Av.* ii. p. 126 (1855); *Jaub. et Barth.-Lapozmm. Rich. Orn.* p. 303 (1859); *Tristr. Ibis*, 1860, p. 77 (Lake of Tuggurt); *Gurney, t. c.* p. 221 (Natal); *id.* 1862, p. 157; *Kirk, Ibis*, 1864, p. 333 (Zambesi); *Gould, B. Gt. Brit.* iv. pl. 25 (1866); *Degl. et Gerbe, Orn. Eur.* ii. p. 301 (1867); *Loche, Expl. Sci. Algér.*, *Ois.* ii. p. 136 (1867); *Tacz. Bull. Soc. Zool. France*, ii. p. 160 (1877: Poland); *Bogd. B. Cauc.* p. 167 (1879); *id. Consp. Av. Imp. Ross.* p. 113 (1884).  
*Nycticorax ralloides*, *Ehrenb. Symb. Phys.*, *Aves*, fol. m (1828).  
*Cancrophagus ralloides*, *Kaup, Natürl. Syst.* p. 42 (1829).  
*Buphus castaneus*, *Brehm, Vög. Deutschl.* p. 589 (1831); *Licht. Nomencl. Av. Mus. Berol.* p. 89 (1854).  
*Buphus ralloides*, *Brehm, tom. cit.* p. 589; *Bp. Comp. List B. Eur. & N. Amer.* p. 48 (1838); *Heugl. Syst. Uebers.* p. 59 (1856); *Salvin, Ibis*, 1859, p. 359 (Marsh of Zana); *Fritsch, Vog. Eur.* *Taf.* 40. figs. 3, 5 (1870); *Saunders, Ibis*, 1871, p. 391 (Southern Spain); *Brooke, Ibis*, 1873, p. 341 (Sardinia).  
*Buphus illyricus*, *Brehm, Vög. Deutschl.* p. 590 (1831).  
*Egretta comata*, *Swains. Classif. B.* ii. p. 354 (1837).  
*Botaurus comatus*, *Macgill. Man. Brit. B.* ii. p. 125 (1842); *id. Brit. B.* iv. p. 426 (1852).  
*Ardeola comata*, *Gray, List Grall. Brit. Mus.* p. 82 (1844); *Blyth, Ibis*, 1865, p. 38; *Gurney in Anderss. B. Dam. Ld.* p. 288 (1872); *Shelley, B. Egypt*, p. 269 (1872); *Buckley, Ibis*, 1874, p. 390 (Bamangwato, Ang.; Transvaal, July); *Irby, Orn. Straits Gibr.* p. 186 (1875); *Wharton, Ibis*, 1876, p. 27 (Corsica); *Ayres, Ibis*, 1877, p. 349 (Transvaal), 1878, p. 300, 1880, p. 111; *Bocage, Orn. Angola*, p. 445 (1881); *Sharpe, ed. Layard's B. S. Afr.* p. 718 (1884); *Radde, Orn. Cauc.* pp. 42, 403 (1884: 6300 ft., breeding); *Reichen. J. f. O.* 1887, p. 50 (Kagehi); *Heine & Reichen. Nomencl. Mus. Hein.* p. 308 (1890); *Shelley, Ibis*, 1894, pp. 27, 476 (Nyasaaland).  
*Ardea subralloides*, *Württemb. Naumannia*, 1857, p. 434 (White Nile).  
*Ardea leucoptera* (nec Bodd.), *Chapm. Trav. S. Afr.* ii. App. p. 416 (1868); *Barratt, Ibis*, 1876, p. 210 (Lydenberg).  
*Bubulcus luteus*, *Doderl. Avif. Sicil.* p. 214 (1869).

*Ardea* (*Ardeola*) *comata*, *Blanf. Geol. & Zool. Abyss.* p. 435 (1870: Antalo).

*Bubulcus ralloides*, *Dubois, Consp. Av. Europ.* p. 27 (1871).

*Adult male in breeding-plumage.* General colour of the back pale vinous, including the ornamental plumes; the wings and tail white, the coverts with a slight yellowish shade, the inner secondaries also washed with ochreous yellow; entire head and neck pale straw-colour, inclining to golden buff on the lower hind-neck, as well as on the throat, fore-neck, and plumes on the sides of the chest; the feathers on the head and hind-neck narrowly edged with black lines, these lines being sub-marginal on the elongated nuchal plumes, the longest of which are white at the ends; chin white; on the throat and fore-neck some scanty lines of dusky blackish, which are sub-marginal, as on the nuchal plumes: "bare skin about the eye, gape, and bill about the nostrils bright grass-green; bill for about an inch black; intermediate portion of bill and base (except round the nostrils) bright ashy blue; upper surface of tarsi and toes ashy, with a tinge of light chrome about the joints and feet; iris very pale chrome-yellow" (*T. Ayres*). Total length 21 inches, culmen 2·6, wing 9·2, tail 3·2, tarsus 2·7, middle toe and claw 2·8.

*Adult female.* Similar to the male, but smaller, with a somewhat shorter crest, and the dorsal train not so fully developed. Total length 19 inches, culmen 2·25, wing 8·1, tail 4·75, tarsus 2·2.

*Adult in winter plumage.* Earthy brown on the back and scapulars, with some yellowish shaft-stripes on the latter; the lower back, rump, and upper tail-coverts white like the tail; wings white, the coverts washed with ochreous buff, the inner secondaries earthy brown like the back; head, neck, and underparts as in the summer plumage, but the crest-plumes not so developed and of the same colour as the crown; the long nape-plumes not developed: "bill dark sap-green, feet darker; claws black; iris yellow; loreal space green" (*F. H. H. Guillemard*).

*Young birds.* Resemble the winter plumage of the adults, but are at once distinguished by the black shafts to the primaries, which are washed or dusted with ashy brown on the outer webs or at the tips. In very young birds the tail is also washed with brown near the end.

*Hab.* A summer visitor to the countries of the Mediterranean, Southern Russia, and the Caspian; accidental in Central Europe. Resident throughout Africa.

|                         |                                                    |                        |
|-------------------------|----------------------------------------------------|------------------------|
| <i>a.</i> Ad. sk.       | Conway, Denbighshire.                              | Old Collection.        |
| <i>b.</i> Ad. sk.       | Germany.                                           | Old Collection.        |
| <i>c-i.</i> ♂ ♀ ad. sk. | Cyprus, April, May ( <i>F. H. H. Guillemard</i> ). | Lord Lilford [P.].     |
| <i>k, l.</i> Ad. st.    | Athens.                                            | Consul Merlin [P.].    |
| <i>m-g.</i> Ad. sk.     | Southern Spain.                                    | Lord Lilford [P.].     |
| <i>r.</i> Ad. sk.       | Marocco.                                           | Tweeddale Coll.        |
| <i>s.</i> Ad. sk.       | Gambia.                                            | Governor Rendall [C.]. |

|                                |                                           |                                    |
|--------------------------------|-------------------------------------------|------------------------------------|
| t. Ad. sk.                     | River Gambia.                             | Sir A. Moloney [P.]                |
| u. ♀ ad. sk.                   | Accra, Gold Coast, July<br>(J. Smith).    | Shelley Coll.                      |
| v. Ad. sk.                     | Fantee (H. T. Ussher).                    | Shelley Coll.                      |
| w. Juv. sk.                    | Buffalo River, S. Africa.                 | Major Trevelyan [P.]               |
| x, y. Ad. et imm. sk.          | Potchefstroom.                            | F. Barratt, Esq. [P.]              |
| z, a'. ♂ ad.; b'.<br>♀ ad. sk. | Potchefstroom, Sept., Oct.<br>(T. Ayres). | Gurney Coll.                       |
| c'. Imm. sk.                   | Zambesi.                                  | Dr. Bradshaw [C.]                  |
| d'-f'. Ad. sk.                 | Zambesi (Dr. Bradshaw).                   | Shelley Coll.                      |
| g', h'. Ad. et<br>imm. sk.     | Tete, Zambesi (Sir J. Kirk).              | Livingstone Expedition.            |
| i'. ♀ ad. sk.                  | Zomba, Nyasaland, July (A.<br>Whyte).     | H. H. Johnston, Esq.,<br>C.B. [P.] |
| k'. ♀ ad. sk.                  | Lake Shirwa, May 20 (A.<br>Whyte).        | H. H. Johnston, Esq.,<br>C.B. [P.] |
| l, m'. Ad. sk.                 | Upper Shiré, Nov. (A. Whyte).             | H. H. Johnston, Esq.,<br>C.B. [P.] |
| n', o'. ♂ ♀ ad. sk.            | Egypt, March, May (G. E. S.).             | Shelley Coll.                      |
| p'-r'. Ad. sk.                 | Suakin.                                   | Surgeon-Capt. Pen-<br>ton [P.]     |
| s'-u'. Ad. et<br>imm. sk.      | Mesopotamia (Commander<br>Jones).         | India Museum.                      |
| v'-x'. ♂ ♀ ad. sk.             | Fao, Persian Gulf.                        | W. D. Cumming, Esq.<br>[P.]        |
| y'. Ad. sk.                    | Bushire, April.                           | A. J. V. Palmer, Esq.<br>[P.]      |

## 2. *Ardeola idæ*.

*Ardea*, sp. n., *Pels. Naum.* 1858, p. 497.

*Ardea malaccensis* ? (nec Gm.), *Kollar, Sitz. b. Akad. Wien*, 1858, p. 342.

*Ardea idæ*, *Hartl. J. f. O.* 1860, p. 167; *id. Beitr. Faun. Madag.* p. 75 (1861); *A. Newt. P. Z. S.* 1865, p. 837; *Grand. Rev. et Mag. de Zool.* 1867, p. 420; *Finsch & Hartl. Vög. Ostafr.* p. 699 (1870); *Gray, Hand-l. B.* iii. p. 30, no. 10139 (1871); *Hartl. Vög. Madag.* p. 303 (1877, pt.).

*Ardea elegans*, *Roch & E. Neot. Ibis*, 1863, p. 170.

*Ardea comata* (nec Pall.), *E. Newton, Ibis*, 1863, p. 456.

*Buphus idæ*, *Verr. in Vinson's Voy. Madag.*, Ann. B, p. 3 (1865).

*Ardea leucoptera* (nec Bodd.), *Schl. P. Z. S.* 1866, p. 425.

*Ardea leucoptera idæ*, *Schl. & Poll. Faun. Madag.* ii. p. 125 (1868).

*Ardea leucoptera*, var. *idæ*, *Milne-Edw. & Grand. Hist. Nat. Madag.*, Ois. p. 556, (1885, pt.).

*Ardeola idæ*, *Sharpe, Nat. Libr., British Birds*, iii. p. 86.

*Adult male in winter plumage.* Similar to the winter plumage of *A. ralloides* and *A. grayi*, especially to that of the latter, but even darker brown, with mesial narrow streaks of ochraceous buff on the back, much broader and brighter ochre on the scapulars; the innermost secondaries like the back, and streaked in the same manner; head black, the feathers streaked down the centre with rufous ochre, those forming the crest having broader centres; sides of face rufous ochre, with a few black streaks on the fore-part of the cheeks; throat rufous ochre, streaked with black, which almost



disappears on the chin, this being white; the long feathers on each side of the chest rufous ochre, broadly edged with black; remainder of under surface, as well as the wings and tail, pure white. Total length 18 inches, culmen 2·5, wing 9·7, tail 3·65, tarsus 2·5. (*Mus. A. & E. Newton.*)

*Young bird.* Resembles the winter plumage of the adults, but has the wing-coverts and the outer webs of the quills brownish, the latter with blackish shafts; the head is blackish, very narrowly streaked with whitish buff: "bill horn-colour; naked skin between the eye and the beak yellowish; skin round eye, base of lower mandible, and legs greenish yellow; iris yellow" (*E. Newton.*). (*Mus. A. & E. Newton.*)

Professor Newton has very kindly lent me some Herons from Madagascar, which have enabled me to determine that two species have hitherto been confounded under the heading of *Ardea idæ*. A white bird in breeding-plumage, in Professor Newton's collection, agrees very well with the plate of the adult *A. idæ* in the 'Histoire Naturelle de Madagascar,' and I cannot see why the bird is not *Garzetta garzetta*. An examination of the specimen in the Paris Museum alone can determine this question. The true *A. idæ* seems to be exceedingly close to the ordinary *Ardeola ralloides* and *A. grayi*, but, for the reasons given above, I have kept it separate for the present.

*Hab.* Madagascar.

### 3. *Ardeola grayi*.

- ? Crabier de Malac, *D'Aubent. Pl. Enl.* viii. pl. 911.
- ? Le Crabier blanc et brun, *Buff. Hist. Nat. Ois.* vii. p. 394 (1780).
- ? Cancroma leucoptera, *Bodd. Tabl. Pl. Enl.* p. 54 (1783).
- ? Malacca Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 78 (1785).
- ? *Ardea malaccensis*, *Gm. Syst. Nat.* i. p. 643 (1788).
- Ardea malaciensis*, *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 425 (1817).
- Ardea grayii*, *Sykes, P. Z. S.* 1832, p. 158 (Deccan); *Gray & Hardw. Illustr. Ind. Zool.* ii. pl. 48 (1833-34); *Gray, Hand-l. B.* iii. p. 30, no. 10136 (1871); *Reichen. J. f. O.* 1877, p. 257.
- Egretta macronata*, *Hodgs. Icon. ined. in Brit. Mus., Grall.* pl. 64, nos. 642-644; *id. in Gray's Zool. Misc.* p. 86 (1844).
- Ardeola leucoptera*, *Gray, List Grall. Brit. Mus.* p. 82 (1844: Nepal); *id. Cat. Mamm. &c. Nepal pres. Hodgs.* p. 134 (1846); *Blyth, Cat. B. Mus. As. Soc.* p. 281 (1849: Calcutta); *Layard, Ann. & Mag. Nat. Hist.* (2) xiv. p. 112 (1854); *Irby, Ibis*, 1861, p. 245 (Oudh); *Jerd. B. Ind.* iii. p. 751 (1864); *Beavan, Ibis*, 1867, p. 333 (Andamans); *Godw.-Aust. J. A. S. Beng.* xxxix. p. 274 (1870: Khasia Hills); *Blanf. op. cit.* xl. p. 276 (1871: Wardha Valley); *Hayes Lloyd, Ibis*, 1873, p. 419 (Kathiawar); *Legge, Ibis*, 1874, p. 30; *Heine & Reichen. Nomencl. Mus. Hein.* p. 308 (1890).
- Ardea leucoptera*, *Gray, Gen. B.* iii. p. 556 (1847); *id. Hand-l. B.* iii. p. 30, no. 10135 (1871); *Reichen. J. f. O.* 1877, p. 257.
- Ardeola malaccensis*, *Reichenb. Grall.* tab. lxxxvii. fig. 500, tab. xc. fig. 1025 (1850).
- Buphus malaccensis*, *Licht. Nomencl. Av. Mus. Berol.* p. 89 (1854); *Bp. Consp. Av.* ii. p. 126 (1855).

- Ardea leucoptera grayi*, *Schl. Mus. Pays-Bas.*, Ardeæ, p. 35 (1863: Nepal; Pondichery; Ceylon).
- Ardeola grayi*, *Holdsw. P. Z. S.* 1872, p. 478 (Ceylon); *Hume, Str. F.* i. p. 256 (1873: Sind); *Adam, t. c.* p. 309 (Sambhur); *Hume, Nests & Eggs Ind. B.* p. 610 (1873); *id. Str. F.* ii. p. 309 (1874: Andamans); *Wald. Ibis*, 1874, p. 148 (Andamans); *Legge, Ibis*, 1875, p. 276 (Ceylon); *Hume, Str. F.* iii. p. 190 (1875: Thayetmyo); *Blyth & Wald. B. Burm.* p. 160 (1875: Arakan: Karennee); *Armstrong, Str. F.* iv. p. 350 (1876: Rangoon); *Hume, t. c.* p. 467 (Laccadives); *Hume & Davison, Str. F.* vi. p. 481 (1878: Tenasserim); *Hume, op. cit.* vii. p. 39 (1878: Travancore); *Davidson & Wenden, t. c.* p. 91 (Deccan); *Ball, t. c.* p. 230 (Ganges to Godavery); *Hume, op. cit.* viii. p. 114 (1879); *Scully, t. c.* p. 361 (Nepal Valley); *Butler, Cat. B. Sind etc.* p. 70 (1879: resident); *id. Cat. B. S. Bomb. Pres.* p. 83 (1880: resident); *Tiraut, Bull. Agric. Cochinchine*, (3) i. p. 151 (1879); *Legge, B. Ceylon*, iii. p. 1150 (1880); *Vidal, Str. F.* ix. p. 90 (1880: S. Konkan); *Bingham, t. c.* p. 197 (Gyne & Attaran Rivers); *Barnes, t. c.* p. 460 (Chaman, S. Afghanistan); *Reid, op. cit.* x. p. 76 (1881: Lucknow); *Davidson, t. c.* p. 324 (1882: W. Khandeish); *Oates, Handb. B. Brit. Burm.* ii. p. 252 (1883); *Davison, Str. F.* x. p. 466 (1883: Nilghiris); *Murray, Vertebr. Faun. Sind*, p. 272 (1884); *Swinh. & Barnes, Ibis*, 1885, p. 136 (Mhow distr.); *Salvad. Ann. Mus. Genov.* (2), iv. p. 615 (1886: Bhamo, June & July); *Taylor, Str. F.* x. p. 466 (1887: Mysore); *Hume, Str. F.* xi. p. 334 (1888: Manipur); *Salvad. Ann. Mus. Genov.* (2) vii. p. 427 (1889: Karin Hills); *Oates, ed. Hume's Nests & Eggs Ind. B.* iii. p. 248 (1890); *Munn, Ibis*, 1894, p. 69 (Calcutta).
- Ardea comata*, *Sharpe, Ibis*, 1886, p. 490 (pt., Bushire).

*Adult male in breeding-plumage.* General colour above, back and scapulars, with the ornamental decomposed plumes, dark maroon, sometimes inclining to blackish chestnut, and sometimes exhibiting a wash of slaty grey; lower back, rump, wings, and tail white, the wings more or less washed with golden buff, the elongated ornamental inner secondaries being entirely of this colour; head and neck greyish ochre, more decidedly grey on the crown, with four elongated white nuchal plumes, the feathers of the crest and sides of neck also much lengthened, the latter decomposed and somewhat spiny in appearance; sides of face clear ochreous; throat pure white; lower throat and fore-neck ashy ochreous, the feathers of the latter being decomposed and ornamental, partaking of the same spiny appearance as those on the sides of the neck, and being somewhat mottled with greyish bases to the feathers; rest of under surface of body, as well as the under wing-coverts and quill-lining, pure white: "bill with the terminal portion black, bluish at the base and on the culmen, sides of both mandibles yellowish; legs and feet greenish, the tarsus pervaded with grey, and the joints bluish; iris golden yellow" (*W. V. Legge*). Total length 18 inches, culmen 2.7, wing 8.75, tail 3.15, tarsus 2.3, middle toe and claw 2.4.

*Adult female.* Similar to the male in colour, but the ornamental plumes not so much developed: "bill with the tip of upper and tip of lower mandible blackish, rest of lower yellowish; legs and feet

greenish yellow; loral skin yellow" (*W. V. Legge*). Total length about 18 inches, culmen 2·6, wing 8·7, tail 3·2, tarsus 2·15, middle toe and claw 2·4.

*Adult in winter plumage.* Brown above, with yellowish longitudinal centres to the scapulars; the wings and tail white as well as the lower back and rump; forehead and crown blackish, streaked with ochraceous buff; sides of face and sides of neck ochraceous buff, longitudinally streaked with blackish, with which the feathers are edged; throat and under surface of body white, with broad black streaks on the lower throat and fore-neck.

Colonel Legge, in his description of the winter plumage, says that the wing-coverts are shaded with brownish buff: this is always the case with young birds, which also have the outer primaries more or less dusky. Occasionally also the adult birds in their winter plumage have a similar dusky shading on their quills; so that the only character for distinguishing young birds from the winter plumage of the adults lies in the blacker crown of the latter, that of the young birds being of a deep ochre or tawny yellowish, somewhat narrowly streaked with black.

The only difference that I can see between the young of *A. grayi* and *A. ralloides* is the somewhat darker brown back of the latter.

*Hab.* Indian Peninsula and Ceylon, to the Burmese Provinces and Cochin China, and apparently extending to Malacca. Occurring westwards to the Persian Gulf.

|                          |                                                      |                                            |
|--------------------------|------------------------------------------------------|--------------------------------------------|
| a. ♀ imm. sk.            | Bushire, Persian Gulf, April 16.                     | A. J. V. Palmer, Esq. [P.]                 |
| b. Juv. sk.              | Afghanistan ( <i>Griffith</i> ).                     | India Museum.                              |
| c. Juv. sk.              | Sind ( <i>Dr. Gould</i> ).                           | India Museum.                              |
| d. ♀ juv. sk.            | River Jhelum, March 11.                              | Dr. Aitchison [P.].                        |
| e. ♀ ad. sk.             | Mount Aboo, June 3 ( <i>G. King</i> ).               | Hume Coll.                                 |
| f, g. ♂ ♀ ad. sk.        | Sambhur, June ( <i>R. M. Adam</i> ).                 | Hume Coll.                                 |
| h. Juv. sk.              | Sirza, Punjab.                                       | Hume Coll.                                 |
| i, k. ♀ ad. et juv. sk.  | Gurgaon District, Aug., Feb. ( <i>W. N. Chill</i> ). | Hume Coll.                                 |
| l, m. Ad. sk.            | Etawah.                                              | Hume Coll.                                 |
| n, o, p. Ad. et juv. sk. | Oudh ( <i>Pinwill</i> ).                             | Tweeddale Coll.                            |
| q. Ad. sk.               | Kamptee.                                             | Dr. R. B. Hinde [P.].                      |
| r, s. Ad. et imm. sk.    | Mhow, Oct., Dec.                                     | Colonel Swinhoe.                           |
| t. Ad. sk.               | Khandeish.                                           | Tweeddale Coll.                            |
| u, v, w. Ad. et juv. sk. | Deccan ( <i>Sykes</i> ).                             | India Museum.                              |
| x. ♂ imm. sk.            | Khandala, April 21 ( <i>S. B. Fairbank</i> ).        | (Types of the species.)<br>Tweeddale Coll. |
| y, z. Juv. sk.           | Ahmednuggur ( <i>S. B. Fairbank</i> ).               | Tweeddale Coll.                            |
| ♂. ♂ imm. sk.            | Belgaum, June ( <i>E. A. Butler</i> ).               | Hume Coll.                                 |
| ♂. Ad. sk.               | Mysore ( <i>Coussmaker</i> ).                        | Gould Coll.                                |
| ♂, ♂. Juv. sk.           | Coorg.                                               | Tweeddale Coll.                            |
| ♂-♂. Imm. sk.            | Travancore ( <i>F. Bourdillon</i> ).                 | Hume Coll.                                 |

|                                                           |                                                   |                              |
|-----------------------------------------------------------|---------------------------------------------------|------------------------------|
| f', k'. Juv. sk.                                          | Calachul, Travancore.                             | F. Bourdillon, Esq.<br>[C.]. |
| l', m'. ♀ juv. sk.                                        | Laccadives, Feb. 18 (A. O.<br>H.).                | Hume Coll.                   |
| n', o'. Ad. et juv. sk.                                   | Ceylon.                                           | Gould Coll.                  |
| p'. Juv. sk.                                              | South Ceylon, June 15.                            | Colonel W. V. Legge<br>[P.]. |
| q'. ♂ juv. sk.                                            | Colombo, July 10 (Hart).                          | Hume Coll.                   |
| r', s'. ♂ ad. et ♀ imm.<br>sk.                            | Ceylon, April, Dec. (S.<br>Chapman).              | Tweeddale Coll.              |
| t', u'. ♂ juv. et ♀ ad.<br>sk.                            | Madras.                                           | Hume Coll.                   |
| v'. ♂ ad. sk.                                             | Rajapur, April 28 (V. Ball).                      | Hume Coll.                   |
| w'. Ad. sk.                                               | Calcutta, April.                                  | Hume Coll.                   |
| x'. Juv. sk.                                              | Behar.                                            | Hodgson Coll.                |
| y'. Ad.; r'. Juv. sk.                                     | Nepal.                                            | Hodgson Coll.                |
|                                                           | (Types of <i>E. macronata</i> , Hodga.)           |                              |
| a'', b''. Juv. sk.                                        | Nepal (B. H. Hodgson).                            | India Museum.                |
| c'', d''. Ad.; e'', f''.<br>Juv. sk.                      | Nepal Valley, May, Aug.,<br>Nov. (J. Scully).     | Hume Coll.                   |
| g''. Juv. sk.                                             | Darjiling Terai, Jan. (L.<br>Mandella).           | Hume Coll.                   |
| h''. Ad. sk.                                              | Buxa Doars, Jan. (L. Man-<br>della).              | Hume Coll.                   |
| i''. Juv. sk.                                             | Assam (McClelland).                               | India Museum.                |
| k'', l''. Juv. sk.                                        | Upper Assam (Reid).                               | Dr. R. B. Sharpe [P.].       |
| m''. ♀ juv. sk.                                           | Assam, March (A. W. Chen-<br>nell).               | Tweeddale Coll.              |
| n'', o''. ♂ ad. sk.                                       | Manipur, Nov. (A. O. H.).                         | Hume Coll.                   |
| p'', q''. ♂ juv. sk.                                      | Elephant Point, Dec. (J.<br>Armstrong).           | Hume Coll.                   |
| r'', s''. ♂ ♀ ad. sk.                                     | Pegu, Dec. (E. W. Oates).                         | Hume Coll.                   |
| t'', u''. ♂ ad.; v''.<br>♀ ad.; w'', x''.<br>♂ ♀ juv. sk. | Pegu, June, Oct., Feb. (E.<br>W. O.).             | Oates Coll.                  |
| y''. Ad. sk.                                              | Thayetmyo.                                        | Tweeddale Coll.              |
| z'', a³. ♂ ♀ imm. sk.                                     | Pahpoon, Tenasserim, Jan.<br>(W. Davison).        | Hume Coll.                   |
| b³. ♀ imm. sk.                                            | Thoungyeen River, March.                          | Col. C. T. Bingham<br>[P.].  |
| c³. ♀ imm. sk.                                            | Amherst, Dec. 15 (W.<br>Davison).                 | Hume Coll.                   |
| d³. Ad. sk.                                               | Long Island, Tavoy R.,<br>April 29 (W. D.).       | Hume Coll.                   |
| e³. ♂ imm. sk.                                            | Pabyin, Mergui distr., Nov.<br>15 (W. D.).        | Hume Coll.                   |
| f³. Juv. sk.                                              | Pakchan, Jan. (W. D.).                            | Hume Coll.                   |
| g³. Juv. sk.                                              | Salang, March 28 (J. Dar-<br>ling).               | Hume Coll.                   |
| h³. Juv. sk.                                              | Cochin China.                                     | M. E. Pierre [P.].           |
| i³. Imm. sk.                                              | Malacca (Dr. Cantor).                             | India Museum.                |
| k³. ♀ imm. sk.                                            | South Andamans, April 24<br>(R. G. W. R.).        | Tweeddale Coll.              |
| l³, m³. ♀ imm. sk.                                        | Aberdeen, S. Andamans,<br>Dec., May (W. Davison). | Hume Coll.                   |
| n³. ♀ imm. sk.                                            | Camorta Isl. Nicobars, Feb.<br>(R. J. Wimberley). | Tweeddale Coll.              |

4. *Ardeola bacchus*.

- Ardea leucoptera* (pt.), *Gray, Gen. B.* iii. p. 556 (1847); *Schl. Mus. Pays-Bas*, Ardeæ, p. 32 (1863: Amoy; Canton); *Hume, Str. F.* viii. pp. 71, 161, 162 (1879: Tonka Isl.).
- Buphus bacchus*, *Bp. Consp. Av.* ii. p. 127 (1855).
- Buphus pseudoralloides*, *Brehm, Naumannia*, 1855, p. 290.
- Ardeola prasinoscelsis*, *Swinh. Ibis*, 1860, p. 64 (Amoy), 1861, p. 52 (Canton), 1863, p. 421 (Formosa, not observed); *id. P. Z. S.* 1863, p. 320; *id. Ibis*, 1870, p. 365 (Hainan); *id. P. Z. S.* 1871, p. 413; *Hume, Str. F.* ii. p. 483 (1874: Tenasserim); *Blyth, B. Burm.* p. 160 (1875); *David & Oust. Ois. Chine*, p. 443 (1877); *Hume & Davison, Str. F.* vi. p. 481 (1878: Tenasserim); *Hume, op cit.* viii. p. 114 (1879); *Tiraut, Bull. Agric. Cochinchine*, (3) i. p. 151 (1879); *Oates, Handb. B. Brit. Burm.* ii. p. 253 (1883); *Seebohm, Ibis*, 1884, p. 35 (Hakodadi); *Tacz. Bull. Soc. Zool. France*, xi. p. 309 (1886: S.E. Ussuri); *De La Touche, Ibis*, 1892, p. 488 (Foochow and Swatow, resident); *Styan, Ibis*, 1893, p. 434 (Hainan).
- Ardea prasinoscelsis*, *Gray, Hand-l. B.* iii. p. 30, no. 10140 (1871).
- Ardea bacchus*, *Gray, tom. cit.* p. 30, no. 10141; *Reichen. J. f. O.* 1877, p. 258.
- Ardeola leucoptera*, *Stejn. Proc. U.S. Nat. Mus.* x. p. 307 (1887: Japan); *Hume, Str. F.* xi. p. 334 (1888: Manipur); *Tacz. Mém. Acad. Imp. Sci. St. Pétersb.* (7) xxxix. p. 984 (1893).
- Nycticorax prasinoscelsis*, *Seebohm, B. Japan. Emp.* p. 225 (1890).
- Ardeola bacchus*, *Heine & Reichen. Nomencl. Mus. Hein.* p. 308 (1890: Amoy).
- Ardea leucoptera*, var. *bacchus*, *Oust. Ann. Sci. Nat.* (7) xii. p. 317 (1892: Ta-t sien-lou).

*Adult male in breeding-plumage.* Back and ornamental scapular plumes black with a slaty-grey wash; lower back, rump, wings, and tail pure white, with some greyish-brown shading on the outer primaries; head and neck all round, as well as a strongly developed nuchal crest, bright chestnut, inclining to maroon on the elongated feathers of the fore-neck; chin and upper throat white; on either side of the upper breast a patch of elongated black plumes like the back; remainder of under surface, including the under wing-coverts, pure white: "one-third of the bill from tip black, then yellow, gradually shading to pale blue at the base of upper mandible; facial skin, gape, and base of lower mandible greenish yellow; feet pale orange; legs and nude portions of tibia similar, but with a pinkish tinge; claws pale brownish green; iris bright yellow" (*W. Davison*). Total length 18.5 inches, culmen 2.6, wing 9.1, tail 3.3, tarsus 2.4, middle toe and claw 2.5.

*Young.* Very similar to the young of *A. grayi*, but appears to be a little darker brown above; the patch of feathers at the sides of the upper breast more strongly marked, being dark brown with very narrow yellowish streaks.

The wing and tarsus in *A. bacchus* are somewhat longer than in *A. grayi*, but the young of the two species are extremely difficult to distinguish.

*Hab.* Eastern Siberia to Japan and China, west to Ta-tsien-lou, and south to the Burmese Provinces, Malay Peninsula, Borneo, and the Andaman Islands.

|                              |                                             |                           |
|------------------------------|---------------------------------------------|---------------------------|
| a, b. Ad. et imm. sk.        | China (S. Bligh).                           | Seebohm Coll.             |
| c, d. ♂ ad. et ♀ juv. sk.    | Shanghai, Aug.                              | Tweeddale Coll.           |
| e. Juv. sk.                  | Shanghai, Oct.                              | Gould Coll.               |
| f. Ad. sk.                   | Shanghai, June.                             | F. W. Styan, Esq.<br>[P]. |
| g, h. ♂ ad. et juv. sk.      | Kiukiang, July, Aug.                        | F. W. Styan, Esq.<br>[P]. |
| i. Ad. sk.                   | Foochow (Campbell).                         | Seebohm Coll.             |
| k. Ad.; l, m, n. Juv. sk.    | Amoy, July, Dec. (R. Swinhoe).              | Gould Coll.               |
| o-r. Ad. et imm. sk.         | Amoy, May (R. Swinhoe).                     | Seebohm Coll.             |
| s, t. Ad. et juv. sk.        | Canton.                                     | Tweeddale Coll.           |
| u. Ad. sk.                   | Fokien.                                     | Gould Coll.               |
| v. ♂ juv. sk.                | Brahmapootra River,<br>Dec. 4 (W. Davison). | Hume Coll.                |
| w, x. ♂ ad. sk.              | Manipur, April (A. O. H.).                  | Hume Coll.                |
| y, z. Juv. sk.               | Karen-nee, Burma, March<br>(R. G. W. R.).   | Tweeddale Coll.           |
| a'. ♂ juv. sk.               | Tenasserim (W. Limborg).                    | Tweeddale Coll.           |
| b', c'. ♂ juv. sk.           | Yeaboo, March 10 (W. Davison).              | Hume Coll.                |
| d'. ♂ juv. sk.               | Choungthanoung, Dec. 25<br>(W. D.).         | Hume Coll.                |
| e', f, g'. ♂ ad. et juv. sk. | Tavoy, April (W. D.).                       | Hume Coll.                |
| h'. ♂ juv. sk.               | Kaukaryit, Oct. 19 (J. Darling).            | Hume Coll.                |
| i'. ♂ imm. sk.               | Salang, March 24 (J. D.).                   | Hume Coll.                |
| k'. Juv. sk.                 | Baram, Sarawak.                             | C. Hose, Esq. [P].        |
| l', m'. Juv. sk.             | South Andaman, March 10<br>(R. G. W. R.).   | Tweeddale Coll.           |

### 5. *Ardeola speciosa*.

*Ardea speciosa*, Horsf. Trans. Linn. Soc. xiii. p. 189 (1821); *id.* Zool. Researches in Java, pt. vii., cum tab. (1824); Reichenb. Grall. tab. xc. fig. 1025 (1850); Gray, Hand-l. B. iii. p. 30, no. 10138 (1871); Reichen. J. f. O. 1877, p. 258; Blasius, Zeitschr. Ges. Orn. iii. p. 208 (1886: Celebes).

*Ardeola speciosa*, Gray, List Gen. B. 1841, p. 86; Wald. Trans. Zool. Soc. viii. p. 98 (1872: Celebes); Salvad. Ucc. Born. p. 351 (1874); Blasius, J. f. O. 1884, p. 219 (S.E. Borneo); Kutter, t. c. pp. 224, 225; Vorderm. Nat. Tijdschr. Nederl. Ind. xlv. p. 237 (1884: Java), xlv. p. 106 (1885: W. Java), xlv. p. 23 (1886: Borneo), xlix. p. 417 (1889: Sumatra); Everett, Journ. Straits Branch As. Soc. 1889, p. 189; Heine & Reichen. Nomencl. Mus. Hein. p. 308 (1890: Java).

*Ardea leucoptera* (pt.), Gray, Gen. B. iii. p. 556 (1847).

*Buphus speciosa*, Bp. Consp. Av. ii. p. 127 (1855).

*Ardea leucoptera speciosa*, Schl. Mus. Pays-Bas, Ardeæ, p. 34 (1863: Java; Banjarmassin; Sumbawa).

*Ardeola leucoptera* (nec Bodd.), Guillem. P. Z. S. 1885, p. 511 (Sumbawa).

*Adult male.* Back and ornamental scapular plumes black; lower back, rump, wings, and tail white, with a slight buffy tinge on the

wings; head and neck all round pale tawny buff, the long ornamental nape-plumes of the same colour, with white tips; the hind-neck, sides of neck, and fore-neck deep ferruginous; remainder of under surface, including the under wing-coverts, white: "bill greenish black, base of lower mandible greenish yellow; feet and tarsus olive-green; iris yellowish" (*F. H. H. Guillemard*). Total length about 15 inches, culmen 2·6, wing 8·15, tail 3, tarsus 2·4, middle toe and claw 2·5.

*Young*. Scarcely to be distinguished from that of *A. grayi*, but somewhat more ashy brown on the back.

*Hab.* Java, Sumatra, Borneo, Sumbawa, and Celebes.

|                                             |                                |                                          |
|---------------------------------------------|--------------------------------|------------------------------------------|
| <i>a, b, c.</i> Ad. sk.                     | Java ( <i>Dr. Horsfield</i> ). | India Museum.<br>(Types of the species.) |
| <i>d, e.</i> ♂ ad.; <i>f.</i> ♀<br>juv. sk. | Java ( <i>Leyden Museum</i> ). | Salvin-Godman Coll.                      |
| <i>g.</i> Juv. sk.                          | Java.                          | Tweeddale Coll.                          |
| <i>h.</i> Imm. sk.                          | Java.                          | Purchased.                               |
| <i>i, k.</i> Ad. et juv. sk.                | Celebes.                       | Tweeddale Coll.                          |
| <i>l.</i> Ad. sk.                           | Menado.                        | Hume Coll.                               |
| <i>m.</i> Juv. sk.                          | Makassar.                      | Wallace Coll.                            |

## 28. BUBULCUS.

*Bubulcus*, *Bp. Ann. Sci. Nat.* (4) i. p. 141 (1854) .... Type. *B. lucidus*.

*Range*. Southern Europe. The whole of Africa; Central Asia, India, China, the Malayan Peninsula and Islands, to the Molucca Islands.

*Key to the Species.*

- a.* White, with the crest and dorsal train vinous sienna or pale vinous isabelline; ornamental plumes of the same colour. .... *lucidus*, p. 213.
- b.* White, but with the crest, throat, and fore-neck orange; the dorsal plumes and ornamental feathers on the neck vinous sienna, tinged with orange or golden ..... *coromandus*, p. 217.

1. *Bubulcus lucidus*.

*Ardea ibis*, *Linn. in Hasselq. Iter.* p. 248 (1757); *Schl. Mus. Pays-Bas*, *Ardeæ*, p. 31 (1803: Senegal; Gold Coast; Nile; Sicily); *id. & Pollen, Faune Madag., Ois.* p. 124 (1868); *Gray, Hand-l. B.* iii. p. 29, no. 10132 (1871); *Heugl. Orn. N.O.-Afr.* ii. Abth. i. p. 1069 (1873: resident; breeds between 14° and 18° N. Lat.; lowlands of Abyssinia; Arabia Petræa); *Bartlett, P. Z. S.* 1875, p. 67 (Madagascar); *Blanf. East. Pers.* ii. p. 296 (1876: Murdâb, Caspian); *Newton, P. Z. S.* 1877, p. 301 (Anjuan); *Brusina, Motr. etc. (Orn. Croat.)*, p. 72 (1890).

*Le Petit Héron blanc*, *Briss. Orn.* v. p. 438 (1760).

*Tantalus ibis* (pt.), *Linn. Syst. Nat.* i. p. 241 (1766).

*Ardea æquinoctialis*, var.  $\beta$ , *Gm. Syst. Nat.* i. p. 641 (1788).

*Ardea æquinoctialis* (*nec L.*), *Montagu, Trans. Linn. Soc.* ix. p. 197 (1808: Devonshire); *Leach, Syst. Cat. Mamm. &c. Brit. Mus.* p. 33 (1816: Devonshire).



- Ardea lucida*, *Rafinesque*, *Caratteri*, p. 3 (1810).  
 Little White Heron, *Montagu*, *Orn. Dict. Suppl.*, with pl. (1813).  
*Ardea ruficapilla*, *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 409 (1817).  
*Ardes coromandelica* (nec *Bodd.*), *Laht. Verz. Doubl.* p. 78 (1823: Egypt).  
*Ardea bubulcus*, *Audouin*, *Expl. somm. Pl. Ois. de l'Egypte*, p. 391, pl. 8. fig. 1 (1828); *Gray*, *List Grallæ Brit. Mus.* p. 82 (1844, pt.); *Schl. Rev. Crit.* p. cxviii (1844); *Thomps. B. Irel.* ii. p. 157 (1850); *Hartl. Orn. West-Afr.* p. 222 (1857: Gambia; Casamance; Gaboon; St. Thomas); *Gurney, Ibis*, 1859, p. 153 (Ibadan); *Tristr. Ibis*, 1860, p. 163 (Lake Halloula); *Powers, t. c.* p. 346 (Butrinto); *Hartl. J. f. O.* 1861, p. 269 (Camma River; Bissao); *id. Faun. Madag.* p. 74 (1861); *Roch & E. Newt. Ibis*, 1863, p. 170 (Madagascar); *Gurney, t. c.* p. 330 (R. Umlaas); *E. Newt. t. c.* pp. 335, 456 (Madagascar); *Sci. P. Z. S.* 1863, p. 164; *A. Newt. P. Z. S.* 1865, p. 837; *Wright, Ibis*, 1864, p. 143 (Malta); *Layard, B. S. Afr.* p. 307 (1867); *Gurney, Ibis*, 1868, p. 256 (Natal and Transvaal); *Sperling, t. c.* p. 291 (Mozambique; Zanzibar); *Gurney, t. c.* p. 468; *Wright, Ibis*, 1869, p. 251 (Malta); *Finsch & Hartl. Vog. Ostaf.* p. 694 (1870); *Dresser & Blasf. Ibis*, 1874, p. 335; *Barratt, Ibis*, 1876, p. 193 (Lydenburg); *Hartl. Vog. Madag.* p. 302 (1877); *Dresser, B. Eur.* vi. p. 245, pl. 400. fig. 1 (1879); *Ayres, Ibis*, 1880, p. 270 (Potchefstroom); *Shelley, Ibis*, 1882, p. 364 (Spalding's, Hart R.); *Milne-Edwards & Grandid. Hist. Nat. Madag. Ois.* ii. p. 552, pl. 227 (1882); *Holub & Pelz. Beitr. Orn. Sudaf.* p. 275 (1882: W. Transvaal; Zambesi); *B. O. U. List Brit. B.* p. 109 (1883); *Seebohm, Ibis*, 1883, p. 32 (Caucasus); *Shelley, t. c.* p. 560 (Shonga, R. Niger); *Tristr. Faun. & Flor. Palest.* p. 110 (1884); *Salvad. Ann. Mus. Genov.* (2) i. p. 228 (1884: Cialalakk); *Eagle-Clarke, Ibis*, 1884, pp. 135, 146 (Hungary); *Ayres, t. c.* p. 233 (Transvaal); *Reid, Ibis*, 1885, p. 250 (Marocco); *Tait, Ibis*, 1887, p. 372 (Portugal); *Guillem. Ibis*, 1888, pp. 110, 113 (Cyprus); *Saunders, Man. Brit. B.* p. 363 (1889); *Meade-Waldo, Ibis*, 1889, p. 4 (Canary Is.); *St. John, t. c.* p. 178 (Quetta); *Lilford, t. c.* p. 343 (Cyprus); *Koenig, J. f. O.* 1890, p. 454 (Madeira); *Frivaldsky, Av. Hung.* p. 131 (1891); *Sibree, Ibis*, 1892, p. 116 (Madagascar); *Koenig, J. f. O.* 1892, p. 88 (Tunis); *Meade-Waldo, Ibis*, 1893, p. 196 (Canary Is.); *Sjöstedt, K. Sv. Vet.-Akad. Handl. Stockh.* xxvii. p. 34 (1895: Cameroons); *id. MT. deutsch. Schutz.* viii. p. 16 (1895).  
*Ardea veranii*, *Roux, Orn. Prov.* pl. 816 (1825); *Temm. Man. d'Orn.* iv. p. 379 (1840); *Werner, Atlas, Gralles*, pl. 8; *Crespon, Orn. Gard*, p. 385 (1840).  
*Ardea russata*, *Wagl. Syst. Av.*, *Ardea*, p. 178, sp. 12 (1827, pt.); *Gould, B. Eur.* iv. pl. 278 (1837); *Keys. & Blas. Wirb. Eur.* pp. lxxx, 219 (1840); *Nordm. in Dénia Voy. Russ. Mérid.* iii. p. 261 (1840); *Mühle, Beitr. Orn. Griechenl.* p. 114 (1844); *E. C. Taylor, Ibis*, 1859, p. 50 (Egypt); *Linderm. Vog. Griechenl.* p. 151 (1860); *Tristr. Ibis*, 1860, p. 372 (E. Algeria); *Smith, Ibis*, 1868, p. 463 (Portugal); *Borggr. Vogelf. Norddeutschl.* p. 123 (1869); *Stevenson, B. Norf.* ii. p. 151 (1870: near Yarmouth); *Harting, Handb. Brit. B.* p. 150 (1872); *Saunders, ed. Yarrell's Brit. B.* iv. p. 187 (1884).  
*Leptorodatis ibis*, *Ehrenb. Symb. Phys. fol. m* (1828).  
*Egretta russata*, *Swains. Classif. B.* ii. p. 354 (1837); *Macgill. Brit. B.* iv. p. 474 (1852).  
*Buphus russatus*, *Bp. Comp. List B. Eur. & N. Amer.* p. 47 (1888)

- Heugl. Syst. Uebers.* p. 59 (1856); *Tristr. Ibis*, 1859, p. 37 (Palestine); *Adams, Ibis*, 1864, p. 31 (Egypt and Nubia); *Gigl. Ibis*, 1865, p. 60 (Pisa); *Bogd. B. Cauc.* p. 167 1879.
- Buphus verrani*, *Bp. Comp. List B. Eur. & N. Amer.* p. 47 (1838).
- Erodias russata*, *Macgill. Man. Brit. B.* ii. p. 135 (1842).
- The Buff-backed Heron, *Yarr. Brit. B.* ii. p. 462 (1843).
- Ardeola bubulcus*, *Gray, List Grall. Brit. Mus.* p. 82 (1844, pt.); *Rüpp. Syst. Uebers.* p. 121 (1845); *Brehm, Vogelf.* p. 295 (1855); *Butler, Feilden, & Reid, Zool.* 1882, p. 344 (Newcastle, Natal).
- Ardeola coromandelica* (*nec Bodd.*), *Rüpp. Syst. Uebers.* p. 121 (1845); *Strickl. P. Z. S.* 1850, p. 221 (Kordofan).
- Ardea coromanda* (*nec Bodd.*), *Gray, Gen. B.* iii. p. 556 (1847, pt.); *id. Cat. Brit. B.* p. 147 (1863); *Tristr. Ibis*, 1868, p. 325 (Palestine); *Brooke, Ibis*, 1873, p. 341 (Sardinia); *Saunders, P. Z. S.* 1886, p. 335 (Diego Garcia).
- Bubulcus ibis*, *Bp. Consp. Av.* ii. p. 125 (1855); *Heugl. Ibis*, 1859, p. 356 (Red Sea); *Tristr. Ibis*, 1860, p. 77 (Tuggurt); *Antin. Cat. descr. Ucc.* p. 104 (1864); *Degl & Gerbe, Orn. Eur.* ii. p. 298 (1867); *Loche, Expl. Sci. Algér., Ois.* ii. p. 135 (1867); *Salvad. Faun. Ital., Ucc.* p. 242 (1871); *Gurney in Anderss. B. Dam. Id.* p. 238 (1872: Ondonga); *Antin. & Salvad. Viagg. Bugos*, p. 149 (1873: Keren; Anseba); *Shelley, P. Z. S.* 1879, p. 678 (Comoro Is.); *Gigl. Ibis*, 1881, p. 212 (Genoa); *Bocage, Orn. Angola*, p. 444 (1881); *Sharpe in Oates's Matebele Land.*, App. B, p. 327 (1881: Tati); *id. ed. Layard's B. S. Afr.* p. 717 (1884); *Seebohm, Hist. Brit. B.* ii. p. 492 (1884); *Radde, Orn. Cauc.* pp. 42, 404 (1884); *Sharpe, Ibis*, 1886, p. 491 (Fao); *Heine & Reichen. Nomencl. Mus. Hien.* p. 308 (1890); *Sharpe, Ibis*, 1891 p. 112 (Fao, Sept.); *Reichen. Vög. deutsch-Ost-Afr.* p. 64 (1894: Bagamoyo; Ussambara; Ugalla; Wualaba; Massai Steppes; Aruscha; Victoria Nyanza).
- Bubulcus ruficristata*, *Verr. MSS.*; *Bp. Consp. Av.* ii. p. 125 (1855).
- Ardeola russata*, *Brehm, Vogelf.* p. 294 (1855); *Shelley, B. Egypt*, p. 268 (1872); *Irby, Orn. Str. Gibr.* p. 185 (1875).
- Buphus coromandelicus* (*nec Bodd.*), *Heugl. Syst. Uebers.* p. 59 (1856).
- Egretta bubulcus*, *Cass. Pr. Philad. Acad.* 1859, p. 173 (Camma R.).
- Buphus bubulcus*, *Salv. Ibis*, 1859, p. 358 (Bizerta; Zana); *Fritsch, Vög. Eur.* tab. 42. fig. 4 (1870); *Saunders, Ibis*, 1871, p. 391 (S. Spain, breeding).
- Herodias russata*, *Salvin, Ibis*, 1859, p. 357 (Eastern Atlas).
- Herodias bubulcus*, *G. C. Taylor, Ibis*, 1860, p. 313; *Stafford Allen, Ibis*, 1863, p. 32 (Egypt); *Kirk, Ibis*, 1864, p. 333 (Zambesi).
- Ardea ruficristata*, *Hartl. Faun. Madag.* p. 74 (1861); *Roch & E. Newt. Ibis*, 1863, p. 170.
- Buphus coromanda* (*nec Bodd.*), *E. C. Taylor, Ibis*, 1867, p. 70 (Egypt).
- Bubulcus russatus*, *Gould, B. Gt. Brit.* iv. pl. 24 (1871); *Bogd. Consp. Av. Imp. Ross.* p. 112 (1884: Lenkoran).
- Bubulcus bubulcus*, *Salvad. Ann. Mus. Genov.* (2) i. p. 228 (1884: Shoa).
- Bubulcus lucidus*, *Salvad. Elenco Ucc. Ital.* p. 243 (1886); *Gigl. Avif. Ital.* p. 280 (1886); *Salvad. Ann. Mus. Genov.* (2) vi. p. 314 (1888: Cialalaka).
- Bubulcus coromandus* (*nec Bodd.*), *Gigl. Ann. Mus. Genov.* (2) vi. p. 58 (1888).

*Adult male in breeding-plumage.* Above and below pure white;

the head crested and having a cap of vinous sienna; the ornamental plumes of the back also vinous sienna, and some ornamental plumes on the fore-neck of the same colour: "bill chrome, but paler towards the gape; tarsi and feet dusky sooty; iris pale chrome, darker towards the outer edge; eyelids also pale chrome" (*T. Ayres*). Total length 19 inches, culmen 2·2, wing 9·8, tail 3·25, tarsus 3·2, middle toe and claw 3·1.

*Adult female*. Similar to the male, but the ornamental plumes not quite so fully developed: "bill and skin about the eye bright chrome-yellow; tibiæ and tarsi pale yellow; feet dusky yellow" (*T. Ayres*). Total length 18·5 inches, culmen 2·3, wing 9·3, tail 3·1, tarsus 3·3, middle toe and claw 2·95.

*Winter plumage of the adults*. Entirely pure white, wanting the ornamental plumes.

*Young*. Similar to the winter plumage of the adults, and devoid of all the ornamental plumes, but having a slight tinge of saffron colour on the head.

The difference in colour of the ornamental plumes in the breeding season between this species and *B. coromandus* are not so pronounced as some ornithologists maintain. Although the crest-feathers and dorsal plumes are of a vinous tint in *B. lucidus* and of an orange tint in *B. coromandus*, it is by no means unfrequent to see specimens of *B. lucidus* which have the crown, dorsal and pectoral plumes tinged with orange: indeed in birds from Cyprus and another from Egypt there is scarcely any difference in the tint of the ornamental plumes from those of *B. coromandus*. In fact, the only differential character between these specimens and *B. coromandus* in full breeding-plumage consists in the greater extent of the bright colour on the head and neck. Similarly with regard to the two specimens collected at Bird Island, Seychelles, by Dr. Coppinger. These have the ornamental plumes distributed as in *B. lucidus*, but the colour is that of *B. coromandus*. Had it not been for the orange-crested birds from Cyprus and Egypt, I should not have hesitated to describe the Bird Island specimens as a distinct species.

*Hab.* Southern Europe, the whole of Africa, and extending to Central Asia.

|                                             |                                                               |                              |
|---------------------------------------------|---------------------------------------------------------------|------------------------------|
| <i>a.</i> Ad. st.                           | Devonshire.                                                   | Montagu Coll.                |
| <i>b-k.</i> ♂ ♀ æstiv. sk.                  | Southern Spain.                                               | Lord Lilford [P.].           |
| <i>l.</i> ♂ æstiv. sk.                      | Zana, Algeria, June 22<br>( <i>O. S.</i> ).                   | Salvin-Godman Coll.          |
| <i>m.</i> Juv. sk.                          | Asia Minor ( <i>T. Robson</i> ).                              | Dr. R. B. Sharpe<br>[P.].    |
| <i>n.</i> Hiem. sk.                         | Dalmatia.                                                     | Old Coll.                    |
| <i>o.</i> ♂ æstiv. sk.                      | Larnaca, Cyprus, April 10,<br>1887 ( <i>Dr. Guillemard</i> ). | Lord Lilford [P.].           |
| <i>p.</i> ♀ æstiv. sk.                      | Limasol, Cyprus, May 7.                                       | Lord Lilford [P.].           |
| <i>q.</i> ♂ æstiv.; <i>r-v.</i><br>Juv. sk. | Fao, Persian Gulf, Sept.                                      | W. D. Cumming,<br>Esq. [P.]. |
| <i>w-z.</i> ♂ æstiv. sk.                    | Egypt, March ( <i>G. E. S.</i> ).                             | Shelley Coll.                |
| <i>a'.</i> Æstiv. sk.                       | Egypt.                                                        | Sir J. Bowring [P.].         |

|                             |                                                      |                                      |
|-----------------------------|------------------------------------------------------|--------------------------------------|
| b'. Juv. sk.                | Shoa (Sir W. C. Harris).                             | India Museum.                        |
| c'. Æstiv. sk.              | River Gambia.                                        | Governor Rendall.                    |
| d'. ♂ æstiv. sk.            | Shonga, River Niger.                                 | Forbes Coll.                         |
| e'. ♂ hiem. sk.             | Rio del Rey, Cameroons.                              | H. H. Johnston, Esq.,<br>O.B. [P.].  |
| f. Hiem. sk.                | River Ogowé, Gaboon.                                 | H. T. Ansell, Esq.<br>[P.].          |
| g'. ♂ æstiv. sk.            | Transvaal.                                           | A. Foresman, Esq.<br>[P.].           |
| h', i', k'. Hiem. sk.       | Potchefstroom.                                       | F. A. Barratt, Esq.<br>[P.].         |
| l', m'. ♂ hiem.; n'-        | Potchefstroom, Feb., March,                          | Gurney Coll.                         |
| q'. ♂ juv. sk.              | June, Aug. (T. Ayres).                               |                                      |
| r'. ♀ ad. sk.               | Tati, Matabele-land (F. Oates).                      | W. E. & C. G. Oates,<br>Esqrs. [P.]. |
| s', t'. Hiem. et æstiv. sk. | Makalaka Country (Dr. Bradshaw).                     | Shelley Coll.                        |
| u', v'. ♂ ♀ æstiv. sk.      | Mpimbi, Upper Shiré Valley,<br>March 10 (A. Whyte).  | H. H. Johnston, Esq.,<br>C.B. [P.].  |
| w'. Hiem. sk.               | Madagascar.                                          | Mr. Gerrard, [C.].                   |
| x'. Æstiv. sk.              | Anjuan Island (Sir J. Kirk).                         | Shelley Coll.                        |
| y', z'. ♂ æstiv. sk.        | Bird Island, Seychelles,<br>March 4 (Dr. Coppinger). | Voy. H.M.S. 'Alert.'                 |

2. *Bubulcus coromandus*.

- Crabier de la côte de Coromandel, *D'Aubent. Pl. Enl.* viii. pl. 910.  
 Le Crabier de Coromandel, *Buff. Hist. Nat. Ois.* vii. p. 393 (1780).  
*Cancroma coromanda*, *Bodd. Tabl. Pl. Enl.* p. 54 (1783).  
*Squacco Heron*, var. *a*, *Lath. Gen. Syn.* iii. pt. 1, p. 75 (1785).  
*Ardea comata*, var. *β*, *Gm. Syst. Nat.* i. p. 633 (1788).  
*Ardea coromandeliensis*, *Steph. in Shaw's Gen. Zool.* xi. p. 577  
 (1819); *id. ibid.* xiv. p. 324 (1826).  
*Ardea affinis*, *Horsf. Trans. Linn. Soc.* xiii. p. 189 (1820).  
*Ardea flavirostris*, *Vieill. Enc. Méth.* iii. p. 1124 (1823).  
*Ardea russata*, *Wagl. Syst. Av.*, *Ardea*, p. 178, sp. 12 (1827, pt.);  
*Gould, B. Eur.* iv. pl. 278 (1837); *Temm. Man. d'Orn.* iv. p. 377  
 (1840); *Werner, Atlas, Gralles*, pl. 12; *Schl. Rev. Crit.* p. 103  
 (1844); *Temm. & Schl. Faun. Jap.* p. 115 (1850); *Gray, P. Z. S.*  
 1860, p. 363 (Batchian).  
*Ardea caboja*, *Frankl. P. Z. S.* 1831, p. 124; *Sykes, P. Z. S.* 1832,  
 p. 158.  
*Egretta flavicans vel russata*, *Hodgs. Icon. ined. in Brit. Mus.,*  
*Grallæ*, pl. 62, nos. 638, 647; *id. in Gray's Zool. Misc.* p. 86  
 (1844).  
*Ardea bubulcus (nec Aud.)*, *Gray, Cat. Mamm. &c. Nepal pres.*  
*Hodgs.* p. 134 (1846); *Layard, Ann. & Mag. N. H.* (2) xiv.  
 p. 111 (1854).  
*Ardea coromanda*, *Gray, Gen. B.* iii. p. 556 (1847); *Schl. Mus. Pays-*  
*Bas, Ardeæ*, p. 30 (1863); *Finsch & Hartl. Vög. Ostaf.* p. 695  
 (1870); *Gray, Hand-l. B.* iii. p. 30, no. 10133 (1871); *Meyer,*  
*J. f. O.* 1873, p. 405; *Hume, Nests & Eggs Ind. B.* p. 618 (1875);  
*Brüggem. Abhandl. Nat. Ver. Bremen*, v. p. 97 (1876); *Reichen.*  
*J. f. O.* 1877, p. 259.  
*Herodias bubulcus (nec Aud.)*, *Blyth, Cat. B. Mus. As. Soc.* p. 280  
 (1849).  
*Bubulcus coromandensis*, *Bp. Consp. Av.* ii. p. 125 (1855).

- Bubulcus coromandus*, *Bp. Compt. Rend.* xl. p. 722 (1855); *Swinh. P. Z. S.* 1871, p. 412; *Hume, Str. F.* ii. p. 309 (1874); *Salvad. Ucc. Born.* p. 350 (1874); *Wald. Trans. Z. S.* ix. p. 237 (1875; Luzon); *Salvad. Ann. Mus. Genov.* vii. p. 681 (1875), viii. p. 384 (1876: Bouru); *David & Oust. Ois. Chine.* p. 441 (1877); *Cripps, Str. F.* vii. p. 307 (1878: Faridpur); *Tweed. P. Z. S.* 1878, p. 624 (Palawan), p. 712 (N. Bohol); *Rosenb. Malay. Arch.* pp. 78, 288 (1878-79); *Hume, Str. F.* viii. p. 114 (1879); *Meyer, Ibis*, 1879, p. 144 (Celebes, breeding); *Legge, B. Ceylon*, p. 1147 (1880); *Vidal, Str. F.* ix. p. 89 (1880: S. Konkan); *Hume, t. c.* p. 119 (Klang, Malay Peninsula); *Sharpe, P. Z. S.* 1881, p. 600 (Sandakan), *Reid, Str. F.* x. p. 75 (1881: Lucknow); *Davidson, t. c.* p. 323 (1882: W. Khandeish); *Salvad. Orn. Pap.* iii. p. 357 (1882); *Parker, Ibis*, 1883, p. 196 (Ceylon); *Nichols, t. c.* p. 257 (Sumatra); *Davison, Str. F.* x. p. 416 (1883: Nilghiris); *Seebohm, Ibis*, 1884, p. 35 (Tokio); *Meyer, Sitz. & Abh. Ges. Isis*, 1884, Abth. i. p. 57 (Banghur); *Pleske, Bull. Acad. St. Pétersb.* xxix. p. 537 (1884: Ternate); *Vorderm. Nat. Tijdschr. Nederl. Ind.* xlv. p. 234 (1885: Java); *Swinh. & Barnes, Ibis*, 1885, p. 136 (Mhow); *Vorderm. Nat. Tijdschr. Nederl. Ind.* xlv. p. 108 (1885: W. Java), xlv. p. 23 (1886: Borneo); *Buttik. Notes Leyd. Mus.* ix. p. 81 (1886: Sumatra); *Stejn. Pr. U.S. Nat. Mus.* x. p. 309 (1887: Japan); *Vorderm. Nat. Tijdschr. Nederl. Ind.* xlix. p. 417 (1889); *Whitehead, Ibis*, 1890, p. 60 (Palawan); *Sharpe, t. c.* pp. 146, 285 (N. Borneo); *Heine & Reichen. Nomencl. Mus. Hein.* p. 308 (1890); *Styan, Ibis*, 1891, pp. 327, 492 (Lower Yangtse); *Salvad. Agg. Orn. Pap.* iii. p. 206 (1891); *De La Touche, Ibis*, 1892, p. 288 (Foochow and Swatow); *Munn, Ibis*, 1894, p. 67 (Calcutta).
- Buphus coromandus*, *Swinh. Ibis*, 1861, p. 52 (Canton), p. 64 (Amoy, breeding); *id. Ibis*, 1862, p. 268 (Foochow); *id. Ibis*, 1863, p. 419 (Formosa, breeding); *Jerd. B. Ind.* iii. p. 749 (1864); *Beavan, Ibis*, 1868, p. 397 (Maunbhoom); *Holdsw. P. Z. S.* 1872, p. 477 (Ceylon); *Hayes Lloyd, Ibis*, 1873, p. 419 (Kathiawar); *Kelham, Ibis*, 1882, p. 193 (Perak); *Tacz. Bull. Soc. Zool. France*, x. pp. 464-478 (1885: Ussuri).
- Herodias coromanda*, *Wall. P. Z. S.* 1863, p. 487 (Timor).
- Ardea coromandelica*, *Finsch, Neu-Guinea*, p. 183 (1865).
- Buphus coromandelianus*, *Swinh. Ibis*, 1866, p. 355 (Formosa).

*Adult in breeding-plumage.* General colour above and below like *B. lucidus*, but the ornamental plumes of a different colour; the entire head, neck, throat, and fore-neck bright orange; the dorsal plumes of a distinct vinous sienna, with a golden tinge, the feathers of the fore-neck also tinged with the same colour: "bill yellow; tibia greenish, tarsi livid, toes blackish; iris bright yellow" (*J. Scully*). Total length about 20 inches, culmen 2.3, wing 10, tail 3.4, tarsus 3.35, middle toe and claw 3.

*Adult female.* Similar to the male in every respect, and equally brightly coloured, but slightly smaller: "bill yellow, with an orange tinge from about the middle to the tip; orbital region pale yellow; tibia dull greenish, tibio-tarsal joint dull greenish, tarsus black with purplish gloss, toes and claws black; iris light yellow" (*J. Scully*). Total length about 21 inches, culmen 2.15, wing 9.5, tail 3.3, tarsus 3.2, middle toe and claw 2.8.

*Young.* Entirely pure white, without any ornamental plumes, but with an orange tinge on the crown.

*Winter plumage.* Also pure white, without any ornamental plumes.

*Hab.* Indian Peninsula and Ceylon to the Burmese countries, and north to Eastern Siberia, Corea, and China, and south to the Moluccas.

|                                        |                                                                            |                              |
|----------------------------------------|----------------------------------------------------------------------------|------------------------------|
| a. Hiem. sk.                           | Busiwella, Ceylon, Dec. 19<br>( <i>S. Chapman</i> ).                       | Tweeddale Coll.              |
| b, c. Hiem. sk.                        | N.E. Ceylon, April, Dec.                                                   | Colonel V. Legge<br>[P.].    |
| d. ♀ hiem. sk.                         | Trevandrum, Travancore,<br>Nov. 13.                                        | F. Bourdillon, Esq.<br>[C.]. |
| e. Vix æstiv. sk.                      | Anjango, Travancore.                                                       | Hume Coll.                   |
| f. ♂ hiem. sk.                         | Khandala, May 10 ( <i>S. B. Fairbank</i> ).                                | Tweeddale Coll.              |
| g. Hiem. sk.                           | Deccan ( <i>Sykes</i> ).                                                   | India Museum [P.].           |
| h. ♀ hiem. sk.                         | Seoni, C. P.                                                               | Hume Coll.                   |
| i, k. ♂ hiem. sk.                      | Mhow, Oct., Dec.                                                           | Colonel Swinhoe<br>[P.].     |
| l. ♀ hiem. ; m. ♂<br>æstiv. sk.        | Sambhur, Nov., June ( <i>R. M. Adam</i> ).                                 | Hume Coll.                   |
| n. Æstiv. sk.                          | Umbala.                                                                    | Colonel Biddulph<br>[C.].    |
| o, p. Æstiv. ; q.<br>Hiem. sk.         | Etawah.                                                                    | Hume Coll.                   |
| r, s, t. Æstiv. sk.                    | Gondah, Oudh.                                                              | Pinwill Coll.                |
| u. Æstiv. ; v, w.<br>Hiem. sk.         | Nepal.                                                                     | Hodgson Coll.                |
| x. Æstiv. sk.                          | (Types of <i>E. flavicans</i> , Hodgs.)<br>Nepal ( <i>B. H. Hodgson</i> ). | India Museum.                |
| y, z. ♂ ♀ æstiv. sk.                   | Nepal Valley, June ( <i>J. Scully</i> ).                                   | Hume Coll.                   |
| ā, ā'. Hiem. sk.                       | Nepal Valley, June, July.                                                  | Dr. J. Scully [C.].          |
| ā', ā'. Æstiv. et<br>hiem. sk.         | Darjiling Terai, Jan., April<br>( <i>L. Mandelli</i> ).                    | Hume Coll.                   |
| ā. ♀ hiem. sk.                         | Assam, Feb. ( <i>A. W. Chennell</i> ).                                     | Tweeddale Coll.              |
| f', g'. ♂ ♀ hiem.<br>sk.               | Dibrughur, Dec. 19 ( <i>J. R. Cripps</i> ).                                | Hume Coll.                   |
| h'. ♂ hiem. sk.                        | China-ba-Keer, Burma,<br>Dec. 17 ( <i>J. Armstrong</i> ).                  | Hume Coll.                   |
| i, k'. ♂ ♀ hiem.<br>sk.                | Pegu, Dec. ( <i>E. W. Oates</i> ).                                         | Hume Coll.                   |
| l. ♂ æstiv. ; m', n'.<br>♂ ♀ hiem. sk. | Pegu, Jan., Aug. ( <i>E. W. O.</i> ).                                      | Oates Coll.                  |
| ā, p'. ♀ hiem. sk.                     | Tonghoo, Oct. ( <i>R. G. W. R.</i> ).                                      | Tweeddale Coll.              |
| q. Hiem. sk.                           | Mandalay, Oct.                                                             | Dr. J. Anderson [C.].        |
| r'. Æstiv. sk.                         | Mundla, Sanda Valley,<br>May 19.                                           | Dr. J. Anderson [C.].        |
| s'. ♂ hiem. sk.                        | Houngthraw River, Jan. 22<br>( <i>W. Limborg</i> ).                        | Tweeddale Coll.              |
| t'. ♀ hiem. sk.                        | Pahpoon, Jan. 5 ( <i>W. Davison</i> ).                                     | Hume Coll.                   |
| u', v'. ♂ æstiv. sk.                   | Tavoy, March, April ( <i>W. D.</i> ).                                      | Hume Coll.                   |
| w'. ♂ hiem. sk.                        | Thatone, Sept. 20 ( <i>W. D.</i> ).                                        | Hume Coll.                   |
| x'. Hiem. sk.                          | Pakchan, Dec. 23 ( <i>W. D.</i> ).                                         | Hume Coll.                   |

|                                                               |                                                     |                             |
|---------------------------------------------------------------|-----------------------------------------------------|-----------------------------|
| y'. ♂ hiem. sk.                                               | Bangkok, Siam, April 2<br>(Capt. Conrad).           | Dr. R. B. Sharpe<br>[P.].   |
| z', a". Æstiv. sk.                                            | Penang (Dr. Cantor).                                | India Museum.               |
| b', c', d". ♂ hiem.<br>sk.                                    | Klang, Selangore, Oct. (W.<br>D.).                  | Hume Coll.                  |
| e". Æstiv. sk.                                                | Malacca (Dr. Maingay).                              | Tweeddale Coll.             |
| f". ♀ vix æstiv. sk.                                          | Aberdeen, S. Andamans,<br>April 23 (W. D.).         | Hume Coll.                  |
| g", h", i". ♂ hiem.;<br>k". ♀ hiem. sk.                       | South Andamans, Sept. to<br>Nov. (R. J. Wimberley). | Hume Coll.                  |
| l'. Hiem. sk.                                                 | South Andamans, Oct. 16<br>(F. A. D. Roepstorff).   | Hume Coll.                  |
| m", n". Æstiv. et<br>hiem. sk.                                | Sumatra (Carl Bock).                                | Tweeddale Coll.             |
| o". ♂ æstiv.; p", q".<br>♀ æstiv. sk.                         | Acheen, Sumatra, Feb. (W.<br>D.).                   | Hume Coll.                  |
| r". ♂ hiem. sk.                                               | Java.                                               | Tweeddale Coll.             |
| s". ♀ æstiv. sk.                                              | Java (Diard).                                       | Salvin-Godman Coll.         |
| t". ♀ æstiv. sk.                                              | Sibulan, Negros, March 9<br>(E. L. Moseley).        | Steere Expedition.          |
| u". ♀ hiem. sk.                                               | N. Bohol, Oct. (A. H.<br>Everett).                  | Tweeddale Coll.             |
| v", w". ♂ ♀ hiem.<br>sk.                                      | Puerto Princessa, Palawan,<br>Dec. (A. H. Everett). | Tweeddale Coll.             |
| x", y". Æstiv. sk.                                            | Celebes.                                            | Tweeddale Coll.             |
| z". ♂ æstiv. sk.                                              | Gorontalo, Celebes, April 16<br>(von Rosenberg).    | Salvin-Godman Coll.         |
| a <sup>1</sup> . ♀ hiem. sk.                                  | Batchian.                                           | Wallace Coll.               |
| b <sup>1</sup> , c <sup>1</sup> . ♂ æstiv. sk.                | East Timor.                                         | Wallace Coll.               |
| d <sup>1</sup> , e <sup>1</sup> . Æstiv. et<br>hiem. sk.      | Hamilton Island, Corea.                             | A. G. Wilday, Esq.<br>[P.]. |
| f <sup>1</sup> , g <sup>1</sup> . Æstiv. sk.                  | Shanghai.                                           | F. Webb, Esq. [P.].         |
| h <sup>1</sup> . Æstiv. sk.                                   | Shanghai, Oct.                                      | F. W. Styan, Esq.<br>[P.].  |
| i <sup>1</sup> . ♂ æstiv. sk.                                 | Shanghai, May (R. Swinhoe).                         | Seeböhm Coll.               |
| k <sup>1</sup> . Æstiv. sk.                                   | Foochow (Campbell).                                 | Seeböhm Coll.               |
| l <sup>1</sup> , m <sup>1</sup> . Æstiv. sk.                  | Amoy, April, May (R.<br>Swinhoe).                   | Seeböhm Coll.               |
| n <sup>1</sup> , o <sup>1</sup> , p <sup>1</sup> . Æstiv. sk. | Fokien.                                             | Gould Coll.                 |
| q <sup>1</sup> . Hiem. sk.                                    | S.W. Formosa, Nov. (R.<br>Swinhoe).                 | Seeböhm Coll.               |
| r <sup>1</sup> -u <sup>1</sup> . Hiem. et<br>æstiv. sk.       | Yokohama, Japan (H.<br>Pryer).                      | Seeböhm Coll.               |
| v <sup>1</sup> . Æstiv. sk.                                   | Sakia, May 24 (Snow).                               | Seeböhm Coll.               |
| w <sup>1</sup> , x <sup>1</sup> . ♂ æstiv. sk.                | Nagasaki, April, May.                               | F. Ringer, Esq. [P.].       |
| y <sup>1</sup> . Skeleton.                                    | Nepal.                                              | Hodgson Coll.               |
| z <sup>1</sup> . Bones of trunk.                              | Nepal.                                              | Hodgson Coll.               |

## 29. ARDETTA.

## Type.

|                                                                                         |                    |
|-----------------------------------------------------------------------------------------|--------------------|
| <i>Ardeola</i> , Bp. <i>Ann. Lyc. N. Y.</i> ii. p. 307 (1826) (nec Boie,<br>1822) ..... | <i>A. exilis</i> . |
| <i>Ardetta</i> , Gray, <i>List Gen.</i> 1842, App. p. 18 .....                          | <i>A. minuta</i> . |
| <i>Erodiscus</i> , Gloger, <i>Handb.</i> i. p. 410 (1842) .....                         | <i>A. minuta</i> . |
| <i>Range.</i> Nearly cosmopolitan.                                                      |                    |



*Key to the Species.***A. Back and scapulars uniform.****a. Crown of head black or blackish.**

**a'.** Greater coverts whitish, or ashy, or creamy buff, but never chestnut; tail black.

**a''.** Wing-coverts creamy buff, the greater series whitish; neck-frill ochreous or ashy fulvous; back and scapulars black; a dusky patch on the lesser wing-coverts ..... *minuta* ♂, p. 222.

**b'.** Wing-coverts orange-buff; greater series lavender-grey; neck-frill bright chestnut like the sides of the face and eyebrow; back and scapulars black; a chestnut patch on the lesser wing-coverts ..... *podicipes* ♂, p. 225.

**c'.** Wing-coverts light clay-colour; greater coverts slightly paler at the tips; neck-frill vinaceous; sides of face also vinaceous; back and scapulars clay-brown ..... *sinensis* ♂, p. 227.

**b'.** Greater wing-coverts for the most part chestnut or entirely chestnut.

**d'.** Back and scapulars greenish black.

**a'''.** Greater coverts entirely chestnut; inner secondaries externally chestnut.

**a<sup>4</sup>.** Primary-coverts and secondaries conspicuously tipped with chestnut ..... *exilis* ♂, p. 231.

**b<sup>4</sup>.** Primary-coverts and secondaries scarcely tipped with chestnut. *neoxena*, p. 233.

**c<sup>4</sup>.** Outer greater coverts chestnut, inner ones clay-brown ..... *erythromelas* ♂, p. 234

**c<sup>4</sup>.** Outer greater coverts chestnut, inner ones clay-brown ..... *pusilla*, p. 234.

**e'.** Back and scapulars chocolate or chestnut-brown.

**b''.** Flanks striped with blackish; primary-coverts and secondary-quills distinctly tipped with rufous ..... *exilis* ♀, p. 231.

**c'''.** Flanks uniform; primary-coverts and secondary quills slaty grey, with obsolete rufous tips ..... *erythromelas* ♀, p. 234.

**b.** Crown of head cinnamon-rufous like the back ..... *cinnamomea* ♂, p. 236.

**B. Back and scapulars mottled or streaked, not uniform.**

**c.** Primary-quills blackish; not tipped with red; tail black.

**e'.** Inner secondaries like the back; no rufous tips to secondary quills.

**f'.** Neck-frill chestnut; the blackish stripes on the flanks distinct ..... *minuta* ♀, p. 222.  
*podicipes* ♀, p. 225.

- g'. Neck-frill vinaceous; dark stripes on the flanks obsolete . . . . . *sinensis* ♀, p. 227.
- d'. Inner secondaries chestnut, remainder of the secondaries black with chestnut tips . . . . . *aridis* juv., p. 231.
- d. Primary-quills and secondaries black, tipped with rufous; crown of head ashy ochreous, with a broad central line of black . . . . . *irohocris* ♂ ♀, p. 235.
- e. Primary-quills uniform cinnamon
- e'. Back uniform cinnamon-brown, like the head . . . . . *cinnamomea* ♀, p. 236.
- f'. Back and wing-coverts thickly mottled with ochreous spots; head blackish . . . *cinnamomea* juv., p. 236.

### 1. *Ardetta minuta*.

The Little Brown Bittern, *Edwards, Nat. Hist. Gleanings*, ii. p. 135, pl. 275 (1760).

Le Blongios, *Briss. Orn.* v. p. 497, pl. 40. fig. 1 (1760); *Buff. Hist. Nat. Ois.* vii. p. 395 (1780).

Le Blongios tacheté, *Briss. Orn.* v. p. 500, pl. 40. fig. 2 (1760).

*Ardea minuta*, *Linn. Syst. Nat.* i. p. 240 (1766); *Gm. Syst. Nat.* i. p. 646 (1788); *Lath. Ind. Orn.* ii. p. 683 (1790); *Pull. Zoogr. Rosso-Asiat.* ii. p. 128 (1811); *Temm. Man. d'Orn.* ii. p. 584 (1820); *Licht. Verz. Doubl.* p. 78 (1823); *Vieill. Enc. Méth.* iii. p. 1126 (1823); *Roux, Orn. Prov.* pls. 322, 323 (1825); *Werner, Atlas, Coureurs*, pl. 29 (1827); *Wagl. Syst. Av.*, *Ardea*, p. 193, sp. 42 (1827); *Naum. Vog. Deutschl.* ix. p. 194, Taf. 227 (1838); *Temm. Man. d'Orn.* iv. p. 383 (1840); *Crespon, Orn. Gard*, p. 390 (1840); *Nordm. in Démid. Voy. Russ. Mérid.* iii. p. 263 (1840); *Selys-Longch. Faun. Belge*, p. 133 (1842); *Schl. Rev. Crit.* p. xcix (1844); *Muhle, Orn. Griechenl.* p. 115 (1844); *Gray, Gen. B.* iii. p. 556 (1847); *Kjærb. Danm. Fugle*, Taf. xxxii. fig. 4, *Suppl. Taf. xiv.* fig. 2 (1852); *Schl. Vog. Nederl.* pls. 196, 197 (1854); *Lindermayer, Vog. Griechenl.* p. 152 (1860); *Sunder. Sv. Fogl.* pl. 76, figs. 1, 2 (1856-72); *Gray, Cat. Brit. B.* p. 148 (1863); *Schl. Mus. Pays-Bas, Ardeæ*, p. 37 (1863); *Wright, Ibis*, 1864, p. 143 (Malta: migrant); *Borggr. Vogelf. Norddeuschl.* p. 123 (1869); *Droste, Vogelw. Borkum*, p. 255 (1869); *Finsch & Hartl. Vog. Ostaf.* p. 705 (1870); *Gray, Hand-l. B.* iii. p. 31, no. 10148 (1871); *Heugl. Orn. N.O.-Afr.* ii. Abth. i. p. 1076 (1873: Egypt; Chartum; Tana Lake; Abyssinia; Dongola; Lower White Nile; Blue Nile); *Fallon, Ois. Belg.* p. 162 (1875); *Madarász, Erläut. Ausst. Ungar. Vogelf.* p. 106 (1891); *Frivaldsky, Av. Hung.* p. 132 (1891).

Blongios de Suisse, *D'Aubent. Pl. Ent.* viii. pl. 323.

Little Bittern, *Lath. Gen. Syn.* iii. pt. 1, p. 65 (1785); *Yarr. Brit. B.* ii. p. 469 (1843).

*Botaurus minutus*, *Boie, Isis*, 1822, p. 559; *Gould, B. Eur.* iv. pl. 282 (1837); *Hewitts. Eggs Brit. B.* ii. p. 277, pl. lxxvi. fig. 1 (1846); *Thomps. B. Irel.* ii. p. 159 (1850); *Macgill. Brit. B.* iv. p. 423 (1852); *R. Gray, B. West Scott.* p. 278 (1871); *Harting, Handb. Br. B.* p. 57 (1872); *Shelley, B. Egypt*, p. 271 (1872); *Reichen. J. f. O.* 1877, p. 243; *Seebold, Hist. Brit. B.* ii. p. 510, pl. 38 (1884).

- Cancrophagus minuta*, *Kaup, Natürl. Syst.* p. 42 (1829).  
*Botaurus pusillus*, *Brehm, Vög. Deutschl.* p. 598 (1831).  
*Butor minutus*, *Swains. Classif. B.* ii. p. 354 (1837).  
*Ardeola minuta*, *Bp. Comp. List B. Eur. & N. Amer.* p. 48 (1838);  
*Keys. u. Blas. Wirb. Eur.* p. lxxx (1840); *Bp. Consp. Av.* ii. p. 133  
 (1855); *Heugl. Ibis*, 1859, p. 346 (Gulf of Tadjura); *Jaub. et*  
*Barth.-Lapomm. Rich. Orn.* p. 365 (1859); *Tristr. Ibis*, 1859,  
 p. 37 (R. Jordan); *Adams, Ibis*, 1864, p. 31 (Egypt); *Lilford,*  
*Ibis*, 1866, p. 384 (Spain: breeding); *Degl. et Gerbe, Orn.*  
*Eur.* ii. p. 139 (1867); *Loche, Expl. Sci. Algér., Ois.* ii. p. 139  
 (1867); *Bettoni, Ucc. nidif. Lomb.* tav. 3 (1865-70); *Doderl.*  
*Avif. Sicil.* p. 215 (1869: breeding); *Fritsch, Vög. Eur.* tab. 37.  
 figs. 3, 4, 5 (1870); *Saunders, Ibis*, 1871, p. 391 (S. Spain:  
 breeding); *Brooke, Ibis*, 1873, p. 341 (Sardinia: migratory);  
*Tacz. Bull. Soc. Zool. France*, ii. p. 160 (1877); *Bogd. B. Cauc.*  
 p. 167 (1879); *Radde, Orn. Cauc.* pp. 42, 404 (1884: Caspian  
 lowlands, on migration near Tiflis; 2000 ft., breeding); *Zaroudn.*  
*Bull. Soc. Mosc.* 1885, p. 125.  
*Ardetta minuta*, *Gray, List Gen. B., App.* p. 13 (1842); *Salvin,*  
*Ibis*, 1859, p. 358 (N. of Zana); *Tristr. Ibis*, 1860, p. 77 (Algeria);  
*Poey's, t. c.* p. 247 (Corfu & Epirus: breeding); *Jerd. B. Ind.* iii.  
 p. 756 (1864); *Gigl. Ibis*, 1865, p. 60 (Pisa: common); *Godm.*  
*Ibis*, 1866, pp. 101, 107 (Azores); *Lilford, t. c.* p. 185 (Spain);  
*Tristr. Ibis*, 1868, p. 325 (Palestine); *Smith, t. c.* p. 453 (Por-  
 tugal); *Gould, B. Gt. Brit.* iv. pl. 29 (1862-73); *Drake, Ibis*,  
 1869, p. 154 (Laraiche); *Elwes & Buckley, Ibis*, 1870, p. 334  
 (Bulgaria: breeding); *Godman, Azores*, p. 34 (1870); *Salvad. Faun.*  
*Ital., Ucc.* p. 243 (1871); *Severtz. Turkest. Jevotn.* p. 68 (1873);  
*Hume & Henders. Lahore to Yark.* p. 296 (1873); *Hume, Str. F.*  
 i. p. 256 (1873: Sind; Simla); *Irby, B. Gibr.* p. 187 (1875);  
*Danf. & Harrie-Brown, Ibis*, 1875, p. 425 (Transylvania); *Dresser,*  
*Ibis*, 1876, p. 326 (Turkestan: breeding); *Blanf. B. East. Persia,*  
 ii. p. 296 (1876); *Butl. Str. F.* iv. p. 41 (1876); *C. B. Wharton,*  
*Ibis*, 1876, p. 27 (Bastia, April); *St. John, Str. F.* vii. p. 175  
 (1878: near Ajmere); *Hume, Str. F.* viii. p. 114 (1879); *Doig,*  
*t. c.* pp. 372, 379 (E. Narra: breeding, May); *Butl. Cat. B. Sind*  
*etc.* p. 70 (1879); *Dresser, B. Eur.* vi. p. 259, pl. 401 (1880);  
*Biddulph, Ibis*, 1881, p. 99 (Gilgit); *Scully, t. c.* p. 592; *Biddulph,*  
*Ibis*, 1882, p. 289 (Gilgit); *Seebohm, t. c.* p. 225 (Astrachan:  
 breeding); *id. Ibis*, 1883, p. 32 (Caucasus); *Severtz. t. c.* p. 72  
 (Pamirs; Kizil-art Gorge); *B. O. U. List Brit. B.* p. 110  
 (1883); *Collett, Forh. Selsk. Chr.* 1883, no. 15 (Norway);  
*Saunders, ed. Yarrell's Brit. B.* iv. p. 200 (1884); *Eagle Clarke,*  
*Ibis*, 1884, p. 46 (Dobanvoci Marsh); *Murray, Vertebr. Faun.*  
*Sind*, p. 274 (1884); *Salvad. Elenco Ucc. Ital.* p. 245 (1886);  
*Gigl. Avif. Ital.* p. 283 (1886); *Sharpe, Ibis*, 1886, p. 490 (Fao),  
 p. 499 (Bushire); *Tait, Ibis*, 1887, p. 373 (Portugal: breeding);  
*Reichen. Syst. Verz. Vög. Deutschl.* p. 41 (1889); *St. John, Ibis*,  
 1889, p. 178 (Candahar, summer); *Ogilvie-Grant, Ibis*, 1890,  
 p. 443 (Madeira); *Heine & Reichen. Nomencl. Mus. Hein.* p. 308  
 (1890: Harz; Sarepta); *Sharpe, Rep. 2nd Yark. Miss., Aves,*  
 p. 125 (1891: Srinagar; Yarkand); *Fatio & Studer, Cat. distr.*  
*Ois. Suisse*, p. 44 (1892); *Koenig, J. f. O.* 1893, p. 88 (Tunis);  
*Meade-Waldo, Ibis*, 1893, p. 198 (Canary Is.).  
*Ardeola pusilla* (nec V.), *Brehm, Naumannia*, 1855, p. 290.

**Adult male.** General colour above black with a greenish gloss,

including the scapulars, lower back, rump, and upper tail-coverts; lesser wing-coverts ochreous buff; median and greater series lavender-grey; bastard-wing, primary-coverts, and quills black; tail black; crown of head crested, greenish black; hind-neck bare, but hidden by ruddy isabelline feathers; sides of the face washed with vinous, the sides of the hinder crown decidedly more ashy; under surface of body ochreous buff; the sides of the throat, abdomen, and under tail-coverts white; the feathers of the chest elongated, some of the feathers white, with buff towards their ends, the long feathers on the sides of the breast blackish with buff margins; the sides of the body with narrow mesial shaft-lines of brown; under wing-coverts and axillaries white: "bill purplish yellow; legs greenish yellow; soles light yellow; iris orange-yellow" (*Scrope Doig.*) Total length 11 inches, culmen 1·8, wing 5·7, tail 1·8, tarsus 1·75, middle toe and claw 1·9.

*Adult female.* Different from the male. General colour above chestnut-brown, including the scapulars and inner secondaries, all the feathers edged with ochreous buff, producing a streaked appearance; wings and tail as in the male; sides of face and frill concealing the neck rather more rufous than in the male, the neck-feathers strongly inclining to chestnut; under surface of body distinctly streaked with dusky centres to the feathers of the throat and fore-neck, the flanks and breast also streaked with blackish centres to the feathers. Total length 12 inches, culmen 1·9, wing 5·8, tail 1·8, tarsus 1·8.

*Young.* Similar to the old female, but much more varied on the upper surface, the feathers being dusky brown, with rufous or yellowish-buff margins, the wing-coverts mottled with brown centres to the feathers instead of being uniform as in the female; the under surface of body much more thickly streaked with dark brown centres to the feathers, those on the breast and flanks being very broad.

*Hab.* Central and Southern Europe, below 60° N. lat., the Mediterranean countries east to Central Asia and N.W. India to 80° E. long. South to Africa in winter.

|                               |                                    |                                 |
|-------------------------------|------------------------------------|---------------------------------|
| a, b, c. ♂ ♀ ad. et pull. sk. | Holland.                           | Salvin-Godman Coll.             |
| d, e, f. Pull. sk.            | Holland.                           | Gould Coll.                     |
| g. Juv. sk.                   | Holland, July.                     | Seebohm Coll.                   |
| h, i. ♂ ♀ ad. sk.             | Holland.                           | Shelley Coll.                   |
| k. ♀ juv. sk.                 | Fogaras, Hungary, July (C. Czynk). | Hungarian National Museum [P.]. |
| l, m. ♂ ♀ ad. sk.             | Mogador (J. Payton).               | Howard Saunders, Esq. [P.].     |
| n. ♀ ad. sk.                  | Funchal, Madeira, April 20.        | W. R. Ogilvie-Grant, Esq. [P.]. |
| o, p. ♂ ♀ ad. sk.             | Corfu.                             | Colonel Portlock [P.].          |
| q. ♂ ad. sk.                  | Egypt (G. E. S.).                  | Shelley Coll.                   |
| r, s. ♂ ♀ ad. sk.             | Near Cairo, April.                 | Thomas J. Smith, Esq. [P.].     |

|                                 |                                                               |                                |
|---------------------------------|---------------------------------------------------------------|--------------------------------|
| t. ♂ ad. sk.                    | Lake Shirwa, Feb. ( <i>A. Whyte</i> ).                        | Sir H. H. Johnston,<br>[P.].   |
| u. ♂ ad. sk.                    | Benguela.                                                     | Monteiro Coll.                 |
| v. ♀ ad. sk.                    | Guiksu, Asia Minor, Sept.<br>( <i>T. Robson</i> ).            | Dr. R. B. Sharpe<br>[P.].      |
| w, x. ♂ ad. et<br>juv. sk.      | Fao, Persian Gulf.                                            | W. D. Cumming,<br>Esq. [P.].   |
| y, z. ♂ ♀ ad. sk.               | Bushire, March, April.                                        | A. J. V. Palmer, Esq.<br>[P.]. |
| α. ♀ ad. sk.                    | Bampur, Baluchistan, April<br>(2000 ft.).                     | W. T. Blanford, Esq.<br>[C.].  |
| β. ♀ ad. sk.                    | Sukkur, Upper Sind, Jan. ( <i>A.</i><br><i>O. H.</i> ).       | Hume Coll.                     |
| ε. ♂ ad. sk.                    | Eastern Narra, May 19 ( <i>S.</i><br><i>Doig</i> ).           | Hume Coll.                     |
| δ-ζ. ♂ ♀ ad.<br>sk.             | Candahar, April to June ( <i>Sir</i><br><i>O. St. John</i> ). | Hume Coll.                     |
| g', h'. ♀ ad. sk.               | Cashmere, June ( <i>T. C. Jerdon</i> ).                       | Hume Coll.                     |
| i, k'. ♂ ♀ ad.<br>sk.           | Cashmere.                                                     | Pinwill Coll.                  |
| l-σ. ♂ ad. sk.                  | Cashmere, Sept.                                               | Hume Coll.                     |
| p', q'. ♂ ♀ ad.<br>sk.          | Cashmere, June ( <i>G. Hender-</i><br><i>son</i> ).           | Hume Coll.                     |
| r', s'. ♂ ad.; t'.<br>♀ ad. sk. | Srinuggur ( <i>Dr. Stoliczka</i> ).                           | 2nd Yarkand Mission.           |
| u', v'. ♂ ad. sk.               | Srinuggur, May, July.                                         | Colonel Biddulph<br>[C.].      |
| w'. ♂ ad.; x'. ♀<br>juv. sk.    | Gilgit, June, Aug.                                            | Colonel Biddulph<br>[C.].      |
| y'. ♂ ad. sk.                   | Delhi.                                                        | Hume Coll.                     |
| z'. Juv. sk.                    | Etawah.                                                       | Hume Coll.                     |

2. *Ardetta podiceps*.

- Ardeola podiceps*, *Bp. Consp.* ii. p. 134 (1855); *Sharpe & Bouv. Bull. Soc. Zool. France*, i. p. 313 (1876: Landana); *Hartl. Abhandl. nat. Ver. Bremen*, viii. p. 215 (1884: Lado).
- Ardea podiceps*, *Hartl. Orn. W.-Afr.* p. 224 (1857: Casamance); *Finsch & Hartl. Vög. Ostaf.* p. 708 (1870); *Heugl. Orn. N.O.-Afr.* iii. pt. 1, p. 1077 (1873: Lower White Nile); *Hartl. Vög. Madag.* p. 307 (1877); *Barnes, Ibis*, 1893, p. 173 (Aden).
- Ardea minuta* (*nec L.*), *Hartl. Orn. W.-Afr.* p. 224 (1857: Gaboon); *Gurney, Ibis*, 1859, p. 249, 1860, p. 205 (Natal); *Monteiro, P. Z. S.* 1865, p. 90 (Benguela); *Layard, B. S. Afr.* p. 309 (1867: Cape Colony); *Gurney, Ibis*, 1868, p. 469 (Transvaal); *Barratt, Ibis*, 1876, p. 211 (Transvaal); *Shelley, P. Z. S.* 1881, p. 599 (Pangani); *id. Ibis*, 1888, p. 304 (Lake Jipi).
- Ardea payesi*, *Hartl. J. f. O.* 1858, p. 42 (*ex J. Verr. MSS.*); *id. J. f. O.* 1861, p. 270 (Casamance).
- Ardea minuta australis*, *Schl. Mus. Pays-Bas, Ardeæ*, p. 39 (1863); *id. & Poll. Faun. Madag.* p. 126 (1868: Nossi-bé).
- Ardetta podiceps*, *Gurney, Ibis*, 1863, p. 330 (Natal); *Gray, Hand-l. B.* iii. p. 31, no. 10148 (1871); *Sharpe, P. Z. S.* 1871, p. 135 (Benguela); *Gurney, Ibis*, 1873, p. 259; *Shelley, Ibis*, 1875, pp. 63, 86 (Ceres); *Gurney, Ibis*, 1877, p. 350, note; *Ayres, Ibis*, 1878, p. 300 (Transvaal); *id. Ibis*, 1884, p. 233, 1886, p. 294; *Gurney, Ibis*, 1886, p. 296 (Gaboon).

- Ardea pusilla* (nec V.), *Layard, B. S. Afr.* p. 310 (1867).  
*Ardetta minuta*, *Gurney in Anders. B. Dam.-Ld.* p. 292 (1872: Okavango and Teoughe Rivers; Lake Ngami).  
*Ardeola minuta* (nec L.), *Bocage, Journ. Lib.* 1872, p. 69, 1879, p. 95.  
*Botaurus* (*Ardetta*) *minutus*, *Reichen. J. f. O.* 1877, p. 13 (Loango Coast).  
*Botaurus minutus* subsp. *pusillus*, *Reichen. J. f. O.* 1877, p. 243.  
*Botaurus pusillus* (nec V.), *Reichen. Corr. Afrik. Ges.* i. p. 1 (1877: Malange); *Bocage, Orn. Angola*, p. 447 (1881: Rio Coroca; Mossamedes); *Sharpe, ed. Layard's B. S. Afr.* p. 720 (1884).  
*Ardea minuta*, var. *podiceps*, *Milne-Edwards & Grandid. Hist. Madag., Ois.* ii. p. 559, pls. 229 A, 230, 230 A (1882).  
*Ardetta podicipes*, *Saunders, Man. Brit. B.* p. 370 (1889).  
*Ardetta pusilla*, *Reichen. Vög. deutsch.-Ost.-Afr.* p. 64 (1894: Pangani; Bukoba).

*Adult.* Similar to *A. minuta*, but easily distinguished by the chestnut or deep cinnamon colour of the sides of the neck, which extends over the sides of the face, and forms also a broad rufous eyebrow; on the bend of the wing near the carpal joint there is a chestnut patch, which also serves to distinguish it from *A. minuta*: "bill very pale chrome, greenish towards the base and gape, and dusky brown on the ridge and tip; tarsi and feet grass-green, the back of the tarsi and soles of feet pale yellow; iris bright brick-red" (*T. Ayres*). Total length 12 inches, culmen 1.8, wing 5.1, tail 1.65, tarsus 1.6, middle toe and claw 1.75.

The Madagascar bird (true *A. podicipes*) is similar to the African species, but very much darker rufous, the sides of the face and sides of neck chestnut, the under surface of the body very deep cinnamon rufous, and the upper wing-coverts chestnut. Total length 9.5 inches, culmen 1.9, wing 5, tail 1.5, tarsus 1.55, middle toe and claw 1.9.

Dr. Reichenow records the true *A. minuta* from the Loango Coast; and many of the African specimens have a greyish vinous shade on the sides of the face and neck, but never to the extent of the true *A. minuta*, which, according to my experience, is very rare in Africa.

*Hab.* Confined to Africa and Madagascar. ? Arabia\*.

|                                        |                                                                           |                           |
|----------------------------------------|---------------------------------------------------------------------------|---------------------------|
| a. Juv. sk.                            | Aden.                                                                     | Lieut. H. E. Barnes [P.]. |
| b. Ad. sk.                             | Accra, Gold Coast ( <i>J. Smith</i> ).                                    | Shelley Coll.             |
| c. Ad. sk.                             | Fantee ( <i>H. T. Usher</i> ).                                            | Shelley Coll.             |
| d. Imm. sk.                            | River Niger ( <i>Baillie</i> ).                                           | Tweeddale Coll.           |
| e. Ad. sk.                             | River Coanza, Angola.                                                     | Sharpe Coll.              |
| f. Ad. sk.                             | Benguela.                                                                 | Monteiro Coll.            |
| g, h. ♂ ♀ ad.;<br>i-n. ♂ ♀ juv.<br>sk. | Potchefstroom, Transvaal, Jan.,<br>Feb., Aug., Sept. ( <i>T. Ayres</i> ). | Gurney Coll.              |
| o. ♀ ad. sk.                           | Potchefstroom.                                                            | F. A. Barratt, Esq.       |
| p. Juv. sk.                            | S.E. Africa.                                                              | J. Locke, Esq. [P.].      |

\* The specimen from Aden, presented to the Museum by the late Lieut. Barnes, appears to me to be *A. podicipes*. Being a young bird, however, it is difficult to identify it with certainty.

|                |                                            |                              |
|----------------|--------------------------------------------|------------------------------|
| ♂. Ad. sk.     | Cape Colony.                               | Gould Coll.                  |
| ♀. Imm. sk.    | Cape Colony.                               | Purchased.                   |
| ♂, ♀. Juv. sk. | Pangani River, E. Africa<br>(Sir J. Kirk). | Shelley Coll.                |
| ♀ ad. sk.      | Lake Jipi.                                 | F. J. Jackson, Esq.<br>[P.]. |
| ♂. Ad. sk.     | Betsileo, Madagascar.                      | Rev. W. Deans<br>Cowan [C.]. |

3. *Ardetta sinensis*.

Chinese Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 99 (1785).

*Ardea sinensis*, *Gm. S. N.* i. p. 642 (1788); *Lath. Ind. Orn.* ii. p. 700 (1790); *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 423 (1817); *Horsf. Trans. Linn. Soc.* xiii. p. 189 (1821); *Gray, Gen. B.* iii. p. 556 (1840); *Schl. Mus. Pays-Bas*, Ardeæ, p. 40 (1863: Buitenzorg; Philippines; Borneo); *Finsch, Neu-Guinea*, p. 183 (1865); *Gray, Hand-l. B.* iii. p. 31, no. 10147 (1871); *Hartl. & Finsch, P. Z. S.* 1872, p. 105 (Uap); *Hume, Nests & Eggs Ind. B.* p. 623 (1873); *Finsch, Journ. Mus. Godeff.* Heft viii. p. 33 (1875: Pelew Is.); *Brüggem. Abhandl. nat. Ver. Bremen*, v. p. 97 (1876: Celebes); *Hartl. Vög. Madag.* p. 306 (1877: Mahé); *Rosenb. Malay. Arch.* p. 278 (1878: Celebes); *Finsch, P. Z. S.* 1880, p. 577 (Ruk Isl.); *id. Ibis*, 1881, p. 540 (New Britain).

*Ardea lepida*, *Horsf. Tr. Linn. Soc.* xiii. p. 190 (1821); *Wagler, Syst. Av.*, *Ardea*, p. 191, sp. 38 (1827); *Less. Traité*, p. 523 (1831: Pondicherry; Marianne Isl.); *Rosenb. Reist. naar Geelvinkb.* p. 8 (1875: Ternate).

Petit Heron aux ailes noires, *Quoy & Gaim. Voy. 'Uranie'*, p. 35 (1824).

*Ardea cinnamomea* (nec *Gm.*), *Gray & Hardw. Ill. Ind. Zool.* i. pl. 66. fig. 1 (1832).

*Ardetta sinensis*, *Gray, List Grall. Brit. Mus.* p. 83 (1844: Nepal; Java); *Blyth, Cat. B. Mus. A. S. B.* p. 282 (1849: Calcutta); *Kelaart, Prodr. Cat. App.* p. 61 (1853); *Layard, Ann. & Mag. N. H.* xiv. p. 113 (1854); *Swinh. Ibis*, 1860, pp. 66, 132 (Amoy, summer), 1861, p. 62 (Hongkong, Macao, Canton), 1862, p. 258 (Foochow), 1863, p. 97 (Tientsin), p. 422 (Formosa); *Jerd. B. Ind.* iii. p. 755 (1864); *Blyth, Ibis*, 1867, p. 173; *Swinh. t. c.* p. 231 (Amoy, breeding); *id. P. Z. S.* 1871, p. 414 (China in summer; Formosa); *Holdsw. P. Z. S.* 1872, p. 478 (Ceylon); *Wald. Tr. Z. S.* viii. p. 99 (1872: Menado); *Meyer, J. f. O.* 1873, p. 405 (Celebes); *Hume, Str. F.* i. p. 450 (1873: Acheen); *id. Str. F.* ii. p. 311 (1874: Andamans; Tillanchoung); *Salvad. Ucc. Born.* p. 354 (1874); *id. Ann. Mus. Genov.* vii. p. 681 (1875); *Blyth & Wald. B. Burm.* p. 160 (1875: Arakan; Tonghoo); *Wald. Tr. Z. S.* ix. pp. 237, 252 (1875: Philippines); *Butler, Str. F.* v. pp. 216, 233 (1877: near Deesa, breeding); *David & Oust. Ois. Chine*, p. 448 (1877: all over China; nesting near Pekin); *Hume & Davison, Str. F.* vi. p. 484 (1878: S. Tenasserim and N.W. of Sittang R.); *Oates, Str. F.* vii. p. 52 (1878); *Davidson & Wenden, t. c.* p. 91 (1878: Deccan); *Butler, t. c.* p. 177 (E. Narra); *Cripps, t. c.* p. 308 (Faridpur, breeding); *Legge, B. Ceylon*, p. 1156 (1879: breeding); *Hume, Str. F.* viii. p. 71 (1879: Malacca), p. 114; *Doig, t. c.* p. 378 (E. Narra, breeding); *Butler, Cat. B. Sind etc.* p. 70 (1879: Guzerat); *id. Cat. B. S. Bomb. Pres.* p. 83 (1880: W. of Belgaum); *Blakist. & Pryer, Tr. As. Soc. Japan*, viii. p. 190 (1880); *Kelham, Ibis*,



- 1882, p. 196 (Singapore; Perak); *Salvad. Ann. Mus. Genov.* xviii. p. 335 (1882); *id. Orn. Papuasia*, iii. p. 363 (1882: Amboina); *Oates, Handb. B. Brit. Burm.* ii. p. 257 (1883); *Vorderm. Nat. Tijdschr. Nederl. Ind.* xlv. p. 238 (1884: Java); *Blakist. Amended List B. Japan*, p. 12 (1884: Yezo); *Murray, Vertebr. Faun. Sind*, p. 274 (1884); *Finsch, Vög. der Sudsee*, p. 21 (1884: New Britain); *Seeb. Ibis*, 1884, p. 268 (Kiukiang, June); *Guillen. P. Z. S.* 1885, p. 665 (Andai); *Wardlaw Ramsay, Ibis*, 1886, p. 162 (Luzon); *Vorderm. Nat. Tijdschr. Nederl. Ind.* xlv. p. 23 (1886: Borneo); *Stejn. Pr. U.S. Nat. Mus.* x. p. 284 (1887); *Salvad. & Gigl. Ucc. Viagg. 'Vettor Pisani'*, p. 130 (1888); *Oust. Le Nat.* 1889, p. 261 (Marianne Isl.); *Vorderm. Nat. Tijdschr. Nederl. Ind.* xlix. p. 417 (1889: Sumatra); *Oates, ed. Hume's Nests & Eggs Ind. B.* iii. p. 255 (1890); *Sharpe, Ibis*, 1890, p. 148 (Abai, N. Borneo); *Heine & Reichen. Nomencl. Mus. Hein.* p. 308 (1890: Timor); *Salvad. Agg. Orn. Papuasia*, iii. p. 206 (1891); *Styan, Ibis*, 1891, pp. 327, 492 (Lower Yangtse); *Wiglesw. Abhandl. K. Mus. Dresden*, no. 6, p. 68 (1891: Marianne Isl.; Caroline Isl.; Uap; Ruk; Pelew Is.); *De la Touche, Ibis*, 1892, p. 489 (Swatow; Foochow); *Styan, Ibis*, 1893, p. 434 (Hainan).
- "*Ardea melanotis*, Cuv.," *Gray, Gen. B.* iii. App. p. 25 (1849: err.); *Pucher. Rev. et Mag. de Zool.* 1851, p. 375.
- Ardea melanophis*, Cuv. *Mus. Paris*; *Pucher. Rev. et Mag. de Zool.* 1851, p. 375.
- Ardea melanoptera*, Cuv.; *Pucher. Rev. et Mag. de Zool.* 1851, p. 375.
- Ardeola sinensis*, *Bp. Consp.* ii. p. 138 (1855); *Wallace, P. Z. S.* 1863, p. 487 (Flores).
- Ardea (Ardetta) sinensis*, *Gray, Cat. B. Trop. Isl. Pacific Ocean*, p. 49 (1859).
- Ardea lepida*, *E. Newton, Ibis*, 1867, p. 343.
- Ardetta pulchra*, *Hume, Str. F.* i. pp. 308, 309, 422 (1873: Andamans).
- Botaurus sinensis*, *Reichen. J. f. O.* 1877, p. 244; *Seeb. B. Japan. Emp.* p. 227 (1890: Japan generally).
- Ardetta sp. incogn.*, *Seeb. Ibis*, 1879, p. 27 (Japan).

**Adult male.** Above earthy brown, slightly tinged with rufous, more especially on the scapulars; wing-coverts clay-brown, the greater series rather paler on the edges; edge of wing white; bastard-wing, primary-coverts, and quills black, slightly shaded with ashy; the inner secondaries brown, tinged with rufous; lower back, rump, and upper tail-coverts ashy grey, the last-named somewhat darker; tail-feathers black; crown of head and nape black; sides of face, ear-coverts, and sides of neck vinous, becoming chestnut on the long frill-like feathers of the latter; throat white, mesially streaked with yellowish buff, like the rest of the under surface; thighs more tawny rufous; lower abdomen and under tail-coverts white; on each side of the upper breast a patch of dependent feathers, of a blackish ground with yellowish-buff margins; under wing-coverts and axillaries pure white; quills slaty below, with paler grey at the ends: "eyelids and facial skin green; upper mandible dark brown on the culmen, and pinkish brown on the margins; lower mandible pinkish brown, turning to green towards the tip; the toes and tibio-tarsal joint pale yellow; tarsus dull

flesh-colour; claws horn-colour; iris yellow" (*E. W. Oates*). Total length 15·5 inches, culmen 2, wing 4·9, tail 1·5, tarsus 1·75.

*Adult female*. Differs from the male in being more rufous above, the feathers of the upper surface being rufous brown with yellowish-buff margins; the crown is black as in the male, the ear-coverts and sides of the face are yellowish buff, and the neck-frill is also washed with the latter colour; the under surface of the body the same as that of the male, but having the mesial lines more strongly indicated by tawny-buff centres to the feathers of the throat and fore-neck: "upper mandible dark brown, lower one greenish yellow; feet greenish yellow" (*E. A. Butler*). Total length 15·5 inches, culmen 2·1, wing 5·2, tail 1·6, tarsus 2.

*Young*. Similar to the old female and streaked in the same manner, but distinguished by having the wing-coverts broadly centred with dark brown, the crown streaked instead of being uniform, the feathers black with yellowish-buff margins, and the under surface of body much more distinctly streaked, the centres of the feathers being dark brown on the throat and fore-neck; flank-feathers also streaked with brown.

Specimens from the Indo-Malayan region and from the Moluccas are often very much darker and richer in plumage than those from more northern localities, and the backs, especially in the females, are much more rufous, while the clay-coloured wing-coverts are often washed with light orange. The inner secondaries are chestnut instead of brown, and the marginal coverts of the wing form a chestnut patch, which extends round the bend of the wing. It was on a bird in this bright phase of plumage that Mr. Hume founded his *Ardea pulchra*; and without doubt the species at first sight would seem to be well founded, but we find the same richly coloured plumage developed in birds from various other localities, and so gradually approached by northern examples, that it is quite evident that these variations are not specific, but are probably due to climatic influences.

*Hab.* Japanese Islands and China to the Indian Peninsula and Ceylon, the Burmese and Malayan countries, through the Malayan Archipelago to New Guinea and North Australia, the Carolines, Mariannes and Pelew group. Also occurring in the Seychelles.

|                              |                                                   |                               |
|------------------------------|---------------------------------------------------|-------------------------------|
| a, b, c. ♂ ♀ ad. sk.         | Eastern Narra, Sind, May 5<br>( <i>S. Doig</i> ). | Hume Coll.                    |
| d. Imm. sk.                  | Hyderabad, Sind, Jan. ( <i>Dr. Gould</i> ).       | India Museum.                 |
| e. ♂ ad.; f, g. ♀ ad. sk.    | Deesa, July, Aug. ( <i>E. A. Butler</i> ).        | Hume Coll.                    |
| h, i, k. ♂ ♀ ad. et juv. sk. | N.W. Provinces.                                   | Pinwill Coll.                 |
| l. ♂ juv. sk.                | Etawah, Sept. 13.                                 | Hume Coll.                    |
| m. ♂ imm. sk.                | Sholapur, Oct. 10.                                | Hume Coll.                    |
| n, o. ♂ ad.; p. ♀ ad. sk.    | Trevandrum, Travancore, Feb.                      | F. Bourdillon, Esq.<br>[P.]   |
| q, r. ♂ ad. et ♀ juv. sk.    | Ceylon, Dec. ( <i>W. V. Legge</i> ).              | Dr. R. Bowdler<br>Sharpe [P.] |

|                                                                      |                                                              |                                                      |
|----------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------|
| a. ♀ ad. sk.                                                         | Madras, Feb. ( <i>A. G. Theobald</i> ).                      | Hume Coll.                                           |
| t, u. ♂ ♀ ad. sk.                                                    | Commillah, Tipperah.                                         | Hume Coll.                                           |
| v. Ad. sk.                                                           | Shillong, Assam.                                             | Hume Coll.                                           |
| w. ♂ ad. sk.                                                         | Dilkoosha, Cachar, June 26.                                  | Hume Coll.                                           |
| x. ♂ ad. sk.                                                         | Tonghoo ( <i>R. G. W. R.</i> ).                              | Tweeddale Coll.                                      |
| y, z, a'. ♂ ♀ ad. sk.                                                | Lower Pegu, July, Aug. ( <i>E. W. O.</i> ).                  | Oates Coll.                                          |
| b'. ♂ ad. sk.                                                        | Amherst, Tenasserim, June ( <i>W. Davison</i> ).             | Hume Coll.                                           |
| c', d', e'. ♂ ad. et juv. ; f'. ♀ ad. sk.                            | Tavoy, March to May ( <i>W. Davison</i> ).                   | Hume Coll.                                           |
| g'. ♀ ad. sk.                                                        | Meeta Myo, April 23 ( <i>W. Davison</i> ).                   | Hume Coll.                                           |
| h'. ♀ ad. sk.                                                        | Tillanchong Isl., Nicobars, March 10 ( <i>W. Davison</i> ).  | Hume Coll.                                           |
| i'. ♂ ad. ; k', l'. ♂ ♀ juv. sk.                                     | South Andamans, Dec., Jan., Aug. ( <i>R. J. Wimberley</i> ). | Tweeddale Coll.                                      |
| m', n', o'. ♀ ad. sk.                                                | Aberdeen, S. Andamans, Dec., May ( <i>W. Davison</i> ).      | Hume Coll. (Types of <i>A. pulchra</i> , Hume.)      |
| p'. Juv. sk.                                                         | Port Blair.                                                  | Hume Coll.                                           |
| q', r'. ♂ ♀ ad. sk.                                                  | Malacca, July ( <i>W. Davison</i> ).                         | Hume Coll.                                           |
| s', t'. ♂ ad. sk.                                                    | Malacca ( <i>Dr. Mainyay</i> ).                              | Tweeddale Coll.                                      |
| u', v', w'. ♂ ad. ; x'. ♀ ad. sk.                                    | Java ( <i>Dr. Horsfield</i> ).                               | India Museum.                                        |
| y'. ♂ ad. ; z'. ♀ imm. sk.                                           | Java ( <i>Diard</i> ).                                       | (Types of <i>A. lepida</i> .)<br>Salvin-Godman Coll. |
| a''. ♂ ad. sk.                                                       | West Java.                                                   | Wallace Coll.                                        |
| b''. Juv. sk.                                                        | Baram, Sarawak.                                              | C. Hoese, Esq. [P.]                                  |
| c''. Juv. sk.                                                        | Manila, Luzon ( <i>Maitland Heriot</i> ).                    | Tweeddale Coll.                                      |
| d'', e'', f''. Ad. sk.                                               | Celebes.                                                     | Tweeddale Coll.                                      |
| g''. ♂ juv. sk.                                                      | Ceram.                                                       | Wallace Coll.                                        |
| h''. Ad. sk.                                                         | Australia.                                                   | Sir D. Cooper [P.]                                   |
| i''. ♂ ad. sk.                                                       | Queensland ( <i>J. T. Cockerell</i> ).                       | Salvin-Godman Coll.                                  |
| k''. ♂ ad. sk.                                                       | Ruk Island, July ( <i>Dr. O. Finsch</i> ).                   | Tweeddale Coll.                                      |
| l''. Juv. sk.                                                        | Japan.                                                       | Tweeddale Coll.                                      |
| m''. ♂ ad. ; n''-r''. ♀ ad. et juv. sk.                              | Yokohama, Japan ( <i>H. Pryer</i> ).                         | Seeböhm Coll.                                        |
| s'', t''. ♀ juv. sk.                                                 | Nagasaki, Nov., Dec.                                         | F. Ringer, Esq. [P.]                                 |
| u''. ♂ ad. ; v''. Juv. sk.                                           | Peiho River, May, Sept. ( <i>R. Swinhoe</i> ).               | Seeböhm Coll.                                        |
| w''. ♂ ad. sk.                                                       | Hankow, summer ( <i>R. Swinhoe</i> ).                        | Seeböhm Coll.                                        |
| x''. ♀ imm. sk.                                                      | Shanghai.                                                    | Tweeddale Coll.                                      |
| y''. ♀ ad. sk.                                                       | Kiukiang, July 6.                                            | F. W. Styan, Esq. [P.]                               |
| z'. ♂ ad. sk.                                                        | Amoy ( <i>R. S.</i> ).                                       | Gould Coll.                                          |
| a <sup>3</sup> . Ad. sk.                                             | Amoy ( <i>R. S.</i> ).                                       | Seeböhm Coll.                                        |
| b <sup>3</sup> , c <sup>3</sup> . ♂ ad. ; d <sup>3</sup> . ♀ ad. sk. | Canton.                                                      | Tweeddale Coll.                                      |
| e <sup>3</sup> , f <sup>3</sup> . ♂ ♀ ad. sk.                        | Canton, April, May ( <i>R. S.</i> ).                         | Seeböhm Coll.                                        |
| g <sup>3</sup> . ♀ ad. sk.                                           | Cochin China.                                                | M. E. Pierre [P.]                                    |

4. *Ardetta exilis*.

- ? Le Héron pourpré du Mexique, *Briss. Orn.* v. p. 422 (1760).  
 ? Le Crabier pourpré, *Buff. Hist. Nat. Ois.* vii. p. 402 (1781).  
 Minute Bittern, *Lath. Gen. Syn.* iii. pt. 1, p. 66 = ♀ ad. (1785).  
 Mexican Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 96 (1785).  
 Little Bittern, *Penn. Arct. Zool.* ii. p. 453 (1785, pt.).  
 ? *Ardea spadicea*, *Gm. Syst. Nat.* i. p. 641 (1788).  
*Ardea exilis*, *Gm. Syst. Nat.* i. p. 645 (1788); *Wilson, Amer. Orn.* viii. p. 37, pl. lxxv. fig. 4 (1814); *Audub. B. Amer.* pl. 210; *id. Orn. Biogr.* iii. p. 77 (1835), v. p. 606 (1839); *id. B. Amer.* 8vo, vi. p. 100, pl. 366 (1843); *D'Orb. in Ramon de la Sagra, H. N. Cuba, Ois.* p. 205 (1839); *Gray, Gen. B.* iii. p. 556 (1847); *Schl. Mus. Pays-Bas, Ardeæ*, p. 39 (1863); *Gray, Hand-l. B.* iii. p. 31, no. 10150 (1871).  
*Ardeola exilis*, *Jard. ed. Wilson, Amer. Orn.* iii. p. 59, pl. lxxvi. fig. 3 (1832); *Gosse, B. Jamaica*, p. 343 (1847); *Bp. Consp.* ii. p. 134 (1855); *Bryant, Proc. Bost. Soc. N. H.* x. p. 257 (1868: Porto Rico); *Sundev. Öfvo. K. Vet.-Akad. Förh. Stockh.* 1869, p. 602 (Porto Rico).  
*Ardetta exilis*, *Gray, List Grallæ Brit. Mus.* p. 38 (1844); *Gundl. J. f. O.* 1856, p. 345; *Cass. in Baird, Cassin, & Laur. B. N. Amer.* p. 673 (1858); *Brewer, Proc. Bost. Soc. N. H.* vii. p. 308 (1860: Cuba); *Scl. P. Z. S.* 1861, p. 81 (Jamaica); *March, Proc. Philad. Acad.* 1864, p. 64 (Jamaica); *Coues, Key N. Amer. B.* p. 270 (1872); *Scl. & Salv. Nomencl. Av. Neotr.* p. 125 (1873, pt.); *Coues, B. N.-West*, p. 528 (1874); *Gundl. J. f. O.* 1875, p. 308 (Cuba); *Reid, Zool.* 1877, p. 480 (Bermudas); *Gundl. Ann. Soc. Esp. H. N.* vii. p. 360 (1878: Porto Rico); *Sennett, Bull. U.S. Geol. Surv.* iv. p. 61 (1878: Texas); *Merrill, Proc. U.S. Nat. Mus.* i. p. 165 (1878: S. Texas); *Belding, t. c.* p. 443 (Murphy's; Stockton); *Cory, B. Bahamas*, p. 174 (1880); *A. & E. Newt. Handb. Jamaica*, p. 111 (1881); *Ridgw. Proc. U.S. Nat. Mus.* iii. p. 197 (1880); *Coues, Check-l. N. Amer. B.* p. 107 (1882); *Baird, Brewer, & Ridgw. Water-B. N. Amer.* i. p. 72 (1884); *Coues, Key N. Amer. B.* 2nd ed. p. 664 (1884); *Cory, List B. W. Ind.* p. 23 (1885); *id. Auk*, v. p. 50 (1888); *id. B. W. Ind.* p. 251 (1889); *id. B. Bahamas*, (2) p. 174 (1890); *id. Cat. B. W. Ind.* p. 89 (1892).  
*Botaurus exilis*, *Reichen. J. f. O.* 1877, p. 244; *A. O. U. Check-l. N. Amer. B.* p. 134 (1886); *Seton, Auk*, iii. p. 150 (1886: Lake Winnipeg); *Cooper, Auk*, iv. p. 87 (1887: Santa Barbara); *Richm. Auk*, v. p. 19 (1888: B. Columbia, breeding); *Scott, Auk*, vi. p. 16 (1889: Florida); *Thompson, Proc. U. S. Nat. Mus.* xiii. p. 489 (Manitoba, accidental).

*Adult male in breeding-plumage.* Back, scapulars, and tail glossy greenish black; wing-coverts light clay-brown, washed with golden yellow; the small coverts round the edge of the wing cinnamon-rufous or chestnut, the whole of the greater series also cinnamon-rufous; bastard-wing, primary-coverts and quills black, tipped with cinnamon spots, which are obsolete on the primaries, the innermost secondaries externally cinnamon, blackish down the inner webs; head and nape black; eyebrow chestnut, as also the tips of the long feathers on the sides of the neck and hind-neck, which form a frill; ear-coverts and sides of face golden; throat, fore-neck, and under surface of body white, tinged with yellowish

buff down the centre of the throat, centre of the body, and outer aspect of the thighs; on each side of the upper breast a tuft of dependent plumes, black with fulvous tips; under wing-coverts white, the greater series ashy with white tips; axillaries dingy brown; quills ashy below: "bill dark olive-brown above, edges of upper mandible and bare frontal space yellow; lower mandible pale yellow, inclining to flesh-colour; feet dull greenish yellow, claws brown: iris yellow" (*J. J. Audubon*). Total length 12 inches, culmen 1.9, wing 4.8, tail 1.55, tarsus 1.55.

*Winter plumage.* Very similar to the summer plumage but brighter and more chestnut, the scapulars with yellowish-buff margins, these scapular edgings often becoming obsolete with the wear of the feathers during the breeding-season.

*Adult female.* Differs from the male in being dark chocolate-brown on the back, with broad ochraceous margins to the scapulars, the yellowish-buff streak down the centre of the throat distinctly pronounced, and varied with blackish streaks, which are also apparent on the sides of the body; the black plumes on the sides of the breast with golden-buff margins. Total length 12.5 inches, culmen 1.7, wing 4.6, tail 1.45, tarsus 1.45.

The female in winter plumage appears to be less brightly coloured, the sides of the breast ashy brown instead of golden buff; the wing-coverts are clay-brown, and not bright ochraceous as in the summer plumage.

*Young.* Brown like the female on the upper parts, but mottled all over with yellowish-buff margins to the feathers, the head dusky rufous or chestnut like the back, the rufous feathers on the sides of the neck fringed with yellowish-buff tips, the primaries tipped with rufous like the secondaries.

A very curious example of this Little Bittern was shot by Mr. Salvin on the Lake of Dueñas, in December 1861. It seems to be identical with ordinary adult specimens of *A. exilis*, but has the tarsus only 1.15 in length. As all the other specimens from the Lake of Dueñas appear to be typical *A. exilis*, this abnormal specimen can only be regarded as a dwarfed individual of that species.

*Hab.* North America generally up to the Great Lakes, south to Texas, Florida, California, and the Greater Antilles, Central America.

|               |                                                                         |                     |
|---------------|-------------------------------------------------------------------------|---------------------|
| a. ♀ imm. sk. | New Haven, Conn., Sept 21<br>( <i>A. J. Dayan: Hensh. Coll.</i> ).      | Salvin-Godman Coll. |
| b. Imm. sk.   | Chicago, Ill., May ( <i>Hensh. Coll.</i> ).                             | Salvin-Godman Coll. |
| c. ♂ ad. sk.  | Waukegan, Ill., June ( <i>E. W. Nelson: Hensh. Coll.</i> ).             | Salvin-Godman Coll. |
| d. ♂ imm. sk. | Pawtuxent River, Indiana, Sept. ( <i>Hensh. Coll.</i> ).                | Salvin-Godman Coll. |
| e. ♀ ad. sk.  | Florida ( <i>Hensh. Coll.</i> ).                                        | Salvin-Godman Coll. |
| f. ♀ ad. sk.  | Ocklawaha River, Florida, April ( <i>C. H. Merriam: Hensh. Coll.</i> ). | Salvin-Godman Coll. |

|                                                                      |                                                                      |                              |
|----------------------------------------------------------------------|----------------------------------------------------------------------|------------------------------|
| <i>g</i> . Pull. sk.                                                 | Merritt's, Florida, June ( <i>C. J. Maynard: Hensh. Coll.</i> ).     | Salvin-Godman Coll.          |
| <i>k-q</i> . ♂ ad. et juv.;<br><i>r, s, t</i> . ♀ ad. et<br>juv. sk. | Tarpon Springs, Florida, May,<br>June ( <i>W. E. D. Scott</i> ).     | Salvin-Godman Coll.          |
| <i>u-x</i> . ♂ ad.; <i>y-c'</i> .<br>♀ ad. sk.                       | De Soto Connty, Florida, May,<br>November ( <i>W. R. Dean</i> ).     | Salvin-Godman Coll.          |
| <i>d'</i> . ♀ ad. sk.                                                | Bermuda, March 1.                                                    | Capt. S. G. Reid<br>[C.].    |
| <i>e'</i> . ♂ ad. sk.                                                | Corpus Christi, May ( <i>F. B. Armstrong</i> ).                      | Salvin-Godman Coll.          |
| <i>f-n'</i> . ♂ ♀ ad. sk.                                            | Brownsville. Jan., April, May<br>( <i>F. B. Armstrong</i> ).         | Salvin-Godman Coll.          |
| <i>o', p'</i> . ♂ ♀ juv.<br>sk.                                      | Nueces County, Texas, Sept.<br>( <i>F. B. Armstrong</i> ).           | Salvin-Godman Coll.          |
| <i>q'</i> . Ad. sk.                                                  | California.                                                          | J. E. Harting, Esq.<br>[P.]. |
| <i>r'</i> . Ad. sk.                                                  | Mexico.                                                              | C. F. Hay, Esq.              |
| <i>s'</i> . Ad. sk.                                                  | Vicinity of the City of Mexico<br>( <i>Elwes</i> ).                  | Salvin-Godman Coll.          |
| <i>t'-x'</i> . Ad. et juv.<br>sk.                                    | Lake of Dueñas, Guatemala,<br>Sept. ( <i>O. S. &amp; F. D. G.</i> ). | Salvin-Godman Coll.          |
| <i>y', z'</i> . ♂ ♀ ad. sk.                                          | Atitlan, Guatemala, Dec. ( <i>W. B. Richardson</i> ).                | Salvin-Godman Coll.          |
| <i>a''</i> . ♀ ad. sk.                                               | Lion Hill Station, Panama ( <i>J. McLeannan</i> ).                   | Salvin-Godman Coll.          |

### 5. *Ardetta neoxena*.

*Ardetta neoxena*, *Cory, Auk*, 1886, p. 262; *Brown, Biol. Review Ontario*, i. p. 86 (1894); *Chapman, Auk*, v. p. 394 (1888); *Cory, Auk*, viii. p. 309 (1891: Florida); *Scott, t. c.* p. 309 (Florida); *Brown, Auk*, x. p. 363 (1893: Toronto); *Watkins, Auk*, xii. p. 77 (1895: Michigan).

*Botaurus neoxerius*, *Scott, Auk*, ix. pp. 141, 142 (1892: Florida).

**Adult male.** General colour above black, with a shade of oily bronze on the back and scapulars, not seen on the lower back and rump; wing-coverts chestnut, with a blackish patch near the bend of the wing, the greater coverts slate-colour, washed with chestnut; quills slaty-grey, the secondaries externally chestnut, the innermost like the back, but strongly glossed with green; tail-feathers black, with a very evident gloss of green; crown of head and nape black, with a greenish gloss; sides of face, ear-coverts, sides of neck, throat and chest deep chestnut, the feathers of the neck-frill marked with greenish black, forming a margin to the frill behind; remainder of under surface of body dusky rufous, with a few white feathers on the thighs; sides of the upper breast black with an oily-green gloss; under wing-coverts rufous, with ashy bases; quills ashy below: on each side of the rump a white powder-down patch: "tarsus and toes greenish yellow; soles yellow" (*H. H. Brown*). Total length 11 inches, culmen 1.7, wing 4.35, tail 1.55, tarsus 1.55. (*Mus. J. H. Fleming*.)

**Hab.** Eastern Canada to Florida.



I am indebted to the kindness of Mr. J. H. Fleming for the loan of a specimen of this species, which appears to be quite distinct from *A. exilis*. A full account of the variations in plumage is given in Mr. Hubert Brown's paper (*l. s. c.*).

### 6. *Ardetta erythromelas*.

- Garza roxa y negro, *Azara, Apunt.* iii. p. 182 (1803).  
*Ardea erythromelas*, *Vicill. N. Dict. d'Hist. Nat.* xiv. p. 422 (1817);  
*Neuwied, Beitr. Naturg Bras.* iv. p. 629 (1833: Rio de Braganza);  
*Hartl. Ind. Azara*, p. 23 (1847); *Burm. Th. Bras.* iii. p. 413  
 (1856); *Pelz. Reis. Novara, Voy.* p. 124 (1865: Rio Janeiro); *id.*  
*Orn. Bras.* pp. 302, 456 (1871: Ypanema, March; Barra do Rio  
 Negro); *Gray, Hand-l. B.* iii. p. 81, no. 10151 (1871).  
*Ardetta exilis*, pt., *Gray, Gen. B.* iii. p. 566 (1847); *Burm. Th.*  
*Bras.* iii. p. 413 (1856: Central and Southern Brazil; Cabo Frio,  
 Mouth of Parahyba); *Scl. & Salv. Nomencl. Av. Neotr.* p. 125  
 (1873).  
*Ardeola erythromelas*, *Bp. Conspect.* ii. p. 134 (1855).  
*Ardea variegata* (*V., nec Scop.*), *Léol. Ois. Trinid.* p. 419 (1866).  
*Ardea involucris* (*nec V.*), *Tacz. Orn. Perou*, iii. p. 399 (1896:  
 Cochabamba, Bolivia; Pacasmayo, Peru).  
*Botaurus erythromelas*, *Reichen. J. f. O.* 1877, p. 244.

*Adult male.* Similar to *A. exilis*, but with the rufous tips to the primary-coverts and secondary-quills almost obsolete; the sides of the face and ear-coverts chestnut like the eyebrow, instead of being golden buff as in *A. exilis*: "bill greyish brown, the lower mandible light yellow, edge of upper mandible dark yellow; lores yellow, with a longitudinal stripe of dark brown; toes and the whole fore part of feet pale green; the entire soles bright yellow; iris clear yellow" (*Neuwied*). Total length 11 inches, culmen 1.8, wing 4.35, tail 1.6, tarsus 1.5.

*Adult female.* Similar to the female of *A. exilis*, but maroon-chestnut above instead of dark chocolate, the primary-coverts and secondaries with scarcely any rufous tips. Total length about 11 inches, culmen 1.8, wing 4.5, tail 1.55, tarsus 1.6.

*Hab.* South America, from Panama to British Guiana and Trinidad, south to Peru, to Paraguay and Rio Janeiro.

- |                |                                                                                |                            |
|----------------|--------------------------------------------------------------------------------|----------------------------|
| a. ♂ ad. sk.   | Bahia, Brazil ( <i>Dr. Wucherer</i> ).                                         | Salvin-Godman Coll.        |
| b. ♂ ad. sk.   | George Town, Demerara.                                                         | J. J. Quelch, Esq.<br>[C.] |
| c, d. Imm. sk. | River Carimagua, British<br>Guiana, Dec., May ( <i>H.</i><br><i>Whately</i> ). | Salvin-Godman Coll.        |
| e. ♀ ad. sk.   | Lion Hill Station, Panama<br>( <i>J. McLeannan</i> ).                          | Salvin-Godman Coll.        |

### 7. *Ardetta pusilla*.

- Spotted Heron, *Lath. Gen. Syn. Suppl.* ii. p. 305 (1801).  
*Ardes maculata* (*nec Bodd.*), *Lath. Ind. Orn. Suppl.* p. lxiv (1801=  
 juv.).



*Ardea pusilla*, Vieill. *N. Dict. d'Hist. Nat.* xiv. p. 432 (1817);  
*Wagler, Syst. Av.*, *Ardea*, p. 97, sp. 44 (1827); *Gray, Gen. B.* iii.  
 p. 566 (1847).

*Ardetta punctata*, Gray, *List Grallæ Brit. Mus.* p. 83 (1844).

*Ardetta pusilla*, Gould, *B. Austr.* vi. pl. 68 (1848); *Reichenb. Vög.*  
*Neuholl.* p. 201 (1850); *Gould, Handb. B. Austr.* ii. p. 319  
 (1865).

*Ardeola pusilla*, Bp. *C. R.* xl. p. 722 (1855).

*Ardeola novæ zelandiæ*, Purdie, *Tr. N. Z. Inst.* iii. p. 99 (1870).

*Ardetta maculata*, Buller, *B. N. Zeal.* p. 235 (1873); *ip. op. cit.* 2nd  
 ed. ii. p. 136 (1888).

*Botaurus maculatus*, Reichen. *J. f. O.* 1877, p. 243.

*Ardetta minuta* (nec L.), Ramsay, *Tab. List Austr. B.* p. 21  
 (1888).

**Adult.** Very similar to *A. exilis* of North America, but having  
 no rufous tips to the primary-coverts or any of the quills; the  
 inner greater coverts are entirely clay-brown, like the median  
 series, and the outer aspect of the innermost secondaries is also of  
 the same colour, and not chestnut as in *A. exilis*: "bill yellow, the  
 culmen nearly black; feet yellow; space round the eye yellow;  
 iris orange" (*J. Gould*). Total length 10 inches, culmen 1·8,  
 wing 5·2, tail 2, tarsus 1·6.

**Hab.** Australia: Gulf of Carpentaria, E. Australia from Rocking-  
 ham Bay to Victoria and S. Australia; New Zealand.

|               |                                        |                     |
|---------------|----------------------------------------|---------------------|
| a, b. ad. sk. | Queensland ( <i>J. T. Cockerell</i> ). | Salvin-Godman Coll. |
| c. Juv. sk.   | Australia.                             | Old Coll.           |

(Type of *A. punctata*.)

### 8. *Ardetta involucris*.

*Garza varia*, Azara, *Apunt.* iii. p. 185 (1803).

*Ardea variegata* (nec Scop.), Vieill. *N. Dict. d'Hist. Nat.* xiv. p. 424  
 (1817).

*Ardea involucris*, Vieill. *Enc. Méth.* iii. p. 1127 (1823); *Gray,*  
*Hand-l. B.* iii. p. 31, no. 10152 (1871).

*Ardea exilis*, pt., Gray, *Gen. B.* iii. p. 23 (1847).

*Ardea erythromelas*, pt., Harth. *Ind. Azara*, p. 23 (1847); *Burm.*  
*Th. Bras.* iii. p. 413 (1856, pt.).

*Ardetta involucris*, *Scl. & Salv. P. Z. S.* 1869, p. 634; *iid. Nomencl.*  
*Av. Neotr.* p. 125 (1873); *Hudson, P. Z. S.* 1875, p. 624; *Durnf.*  
*Ibis*, 1876, p. 162 (Buenos Ayres, Oct.), 1877, p. 189, 1878, p. 62  
 (nesting); *Gibson, Ibis*, 1880, p. 159 (Cape S. Antonio, nesting);  
*Baird, Brewer, & Ridgw. Water-B. N. Amer.* i. p. 72, note (1884);  
*Barrows, Auk*, i. p. 271 (1884: Lower Uruguay); *Withington,*  
*Ibis*, 1888, p. 470 (Lomas de Zamora); *Scl. & Hudson, Argent.*  
*Orn.* ii. p. 101, pl. xvii. (1889); *Holland, Ibis*, 1892, p. 205  
 (Estancia Espartilla, breeding).

*Botaurus erythromelas*, pt., Reichen. *J. f. O.* 1877, p. 244.

*Botaurus involucris*, *Ridgw. Man. N. Amer. B.* p. 128 (1887).

*Ardetta erythrolæma*, Heine & Reichen. *Nomencl. Mus. Hein.* p. 308  
 (1890: Chili).

*Butorides involucris*, *Scl. Ibis*, 1893, p. 561.

**Adult.** General aspect above striped, with black and deep ochre,

the scapulars being black with ochreous margins; the minor coverts round the edge of the wing chestnut, the median coverts pale ochreous with yellowish-white or whitish edges to the feathers, imparting a streaked appearance, many of the greater coverts chestnut on the inner webs; bastard-wing and primary coverts chestnut, with black bases; quills black, broadly tipped with chestnut, increasing in extent on the secondaries, the first primary white along the outer web, the inner secondaries chestnut with dusky bases and yellowish margins; tail-feathers dark brown in the centre with yellowish-buff margins; crown of head and neck ashy brown, with a median streak along the crown, consisting of black elongated feathers, tinged with rufous on the forehead; sides of face slightly washed with yellowish buff, as also the feathers of the frill which hides the neck; under surface of body white, with a central streak of buff down the throat; the fore-neck and chest streaked with yellowish buff, and slightly varied with dusky shaft-lines, the flanks being longitudinally centred with black; thighs yellowish buff externally, mottled with black bases to the feathers, the inner aspect of the thighs white like the abdomen and under tail-coverts; under wing-coverts white, washed with yellowish buff; axillaries white, washed with yellowish buff, but somewhat shaded with ashy near the base; on each side of the breast a patch of dependent plumes which are blackish with yellowish-buff margins: "bill yellowish green; legs and toes lemon-green; iris straw-yellow" (*F. Withington*). Total length 11.5 inches, culmen 1.5, wing 5, tail 1.8, tarsus 1.5.

*Hab.* Paraguay, Southern Brazil, and N. Patagonia; Chili.

- |              |                                    |                      |
|--------------|------------------------------------|----------------------|
| a. ♀ ad. sk. | Lomas de Zamora, Buenos Ayres,     | Sclater Coll.        |
|              | Sept. ( <i>F. Withington</i> ).    |                      |
| b. Ad. sk.   | Punta Lara, Buenos Ayres, Oct. 19. | H. Durnford, Esq.    |
|              |                                    | [C.]                 |
| c. Ad. sk.   | Uruguay.                           | Alan Peel, Esq. [C.] |
| d. ♀ ad. sk. | Rio Negro, Patagonia, Dec. 3       | Salvin-Godman Coll.  |
|              | ( <i>W. H. Hudson</i> ).           |                      |
| e. ♂ ad. sk. | Chili ( <i>Weischaupt</i> ).       | Salvin-Godman Coll.  |
| f. Ad. sk.   | Chili ( <i>E. C. Reed</i> ).       | Salvin-Godman Coll.  |

#### 10. *Ardetta cinnamomea*.

Cinnamon Heron, *Lath. Gen. Syn.* iii pt. 1, p. 77 (1785).

*Ardea cinnamomea*, *Gm S. N.* 1, p. 643 (1788), *Vieill. N. Dict. d'Hist. Nat* xiv p. 426 (1817); *Wagler, Syst. Ar*, *Ardea*, p. 191, sp. 39 (1827); *Raffl. Tr. Linn. Soc* xiii p. 326 (1822); *Gray & Hardw. Ill. Ind. Zool.* i, pl. 66, fig. 1 (1832); *Schl. Mus. Pays-Bas, Ardeæ*, p. 40 (1863: Java, Borneo, Philippines); *Gray, Hand-l. B.* iii, p. 31, no. 10146 (1871); *Hume, Nests & Eggs Ind. B.* p. 622 (1873); *Bruggem. Abhandl. Nat. Ver. Bremen*, v. p. 97 (1876: Celebes)

*Ardea nebulosa*, *Horaf. Tr. Linn. Soc.* xiii, p. 190 (1821).

*Botaurus cinnamomeus*, *Franklin, P. Z. S.* 1831, p. 124; *Reichen. J. f. O.* 1877, p. 245.

*Egretta cinnamomea*, *Hodgs. Icon. ined. in Brit. Mus., Grallæ*, pl. 18 (no. 624); *id. in Gray's Zool. Misc.* p. 86 (1844).

*Ardetta sinensis* (*nec Gm.*), *Gray, List Grallæ Brit. Mus.* p. 83 (pt., 1844: spec. a).

*Ardetta cinnamomea*, *Gray, List Grallæ Brit. Mus.* p. 83 (1844); *id. Gen. B.* iii. p. 556 (1847); *Blyth, Cat. B. Mus. A. S. B.* p. 282 (1849: Calcutta); *Swinh. Ibis*, 1860, p. 65 (Amoy; summer), 1861, p. 53 (Hongkong; Macao; Canton); *id. Ibis*, 1862, p. 258 (Foochow), 1863, p. 422 (Formosa); *Scl. P. Z. S.* 1863, p. 223 (Banjarmassin); *Jerd. B. Ind.* iii. p. 755 (1864); *Hume, Ibis*, 1870, p. 438 (Tippera); *Swinh. P. Z. S.* 1871, p. 413; *Holdsw. P. Z. S.* 1872, p. 478; *Hume, Str. F.* ii. p. 311 (1874: Tillanchong); *Ball, t. c.* p. 435 (Oodeypur); *Salvad. Ucc. Born.* p. 354 (1874); *Blyth & Wald. B. Burm.* p. 160 (1875: Arakan; Rangoon); *Walden, Tr. Z. S.* ix. pt. 2, p. 237 (1875: Philippines); *Fairb. Str. F.* iv. p. 263 (1876: Mahabaleshwar); *Hume, Str. F.* v. p. 47 (Cachar; migrant); *Oates, t. c.* p. 168 (Pegu; breeding); *Tweedd. P. Z. S.* 1877, p. 703 (Luzon); *David & Oust. Ois. Chine*, p. 447 (1877: China, summer; Manchuria); *Tweedd. P. Z. S.* 1878, p. 345 (S. Leyte); *id. t. c.* p. 953 (Zamboanga); *Hume & Davison, Str. F.* vi. p. 483 (1878: S. Tenasserim only; W. of Sittang R.); *Butler, Str. F.* vii. p. 177 (1878: E. Narra, breeding); *Ball, t. c.* p. 231 (Sirjuja); *St. John, t. c.* p. 271 (Ajmere); *Cripps, t. c.* p. 308 (Faridpur, breeding); *Hume, t. c.* p. 490 (Calcutta, breeding); *Butler, Cat. B. Sind etc.* p. 70 (1879: Sind, breeding); *Hume, Str. F.* viii. p. 71 (Malacca), p. 114 (1879); *Butler, Cat. B. S. Bomb. Pres.* p. 83 (1880: Belgaum, breeding); *Bingham, Str. F.* viii. p. 197 (1880: Sinzaway); *Doig, t. c.* p. 372 (E. Narra, breeding); *Oates, Str. F.* x. p. 243 (1882); *Kelham, Ibis*, 1882, pp. 189, 195 (Singapore; Perak); *Oates, Handb. B. Brit. Burm.* ii. p. 256 (1883: breeding); *Blasius, J. f. O.* 1884, p. 219 (S.E. Borneo); *Murray, Vertebr. Faun. Sind*, p. 274 (1884); *Vorderm. Nat. Tijdschr. Nederl. Ind.* xlvi. p. 23 (1886: Borneo); *Büttik. Notes Leyd. Mus.* ix. p. 81 (1886: Sumatra); *Vorderm. Nat. Tijdschr. Nederl. Ind.* xlix. p. 417 (1889: Sumatra); *Everett, Journ. As. Soc. Straits Branch*, 1889, p. 190 (Labuan; Banjarmasin; Negaka); *Oates, ed. Hume's Nests & Eggs Ind. B.* iii. p. 252 (1890); *Heine & Reichen. Nomencl. Mus. Hein.* p. 308 (1890: Sumatra; Luzon); *Sharpe, Ibis*, 1890, pp. 147, 285 (Labuan); *Styan, Ibis*, 1891, pp. 327, 493 (Lower Yangtse, summer); *De la Touche, Ibis*, 1892, p. 489 (Swatow; Foochow).

*Ardea sinensis* (*nec Gm.*), *Gray, Cat. Mamm. etc. Nepal pres. Hodgs.* p. 134 (1846).

*Ardeola cinnamomea*, *Bp. Consp.* ii. p. 132 (1855); *id. C. R.* xl. p. 722, no. 112 (1855).

*Ardea* (*Ardeola*) *cinnamomea*, *Schrenck, Reis. Amurl.* p. 447, Taf. xiv. figs. 1, 2 (1859: Amoor, breeding); *Radde, Reis. Sibir., Vög.* p. 344 (1863; Ditchum Valley).

*Ardeiralla cinnamomea*, *Legge, B. Ceylon*, p. 1162 (1879).

**Adult male.** Entirely cinnamon-rufous above, including the wings and tail; sides of face and ear-coverts also cinnamon-rufous; cheeks a little lighter rufous; throat ashy white, with a median streak of tawny rufous, which extends down the throat and fore-neck, being streaked with blackish longitudinal marks on the outer webs of the feathers; lower throat, fore-neck, breast, sides of body, and thighs tawny rufous; abdomen white; under tail-coverts tawny buff;

on the sides of the upper breast a patch of dependent feathers, having black centres with tawny-buff or rufous margins; under wing-coverts tawny buff; axillaries and under surface of quills pale chestnut: "eyelids and facial skin reddish purple; bill nearly all yellow, the culmen alone being dark brown; legs and toes yellowish green; claws brown; iris yellow to pale red" (*E. W. Oates*). Total length 11 inches, culmen 1·8, wing 5·55, tail 1·6, tarsus 1·9.

*Adult males in winter* appear to be a little more dingy on the upper parts than in summer, the head and back being shaded with greyish brown.

*Adult female.* Mantle and back uniform dark brown; wing-coverts dingy brown, but mottled with sandy-buff margins and chequered notches, which appear also on the scapulars and inner secondaries, and have also sub-terminal markings of darker brown on many of the coverts; the greater coverts, primary-coverts, and quills are chestnut, with a good deal of dusky at the base and on the inner webs, the primary-coverts also dusky towards the ends; tail-feathers dull chestnut; crown of head and nape dusky brown; the frilled feathers on the sides of the neck brown in the centre, with yellowish margins; sides of face yellowish buff, streaked with brown; the whole of the under surface yellowish buff, very thickly streaked with dark brown, the sides of the throat whiter, the feathers composing the broad mesial streak down the middle of the throat and fore-neck having a distinct rufous shade; on each side of the upper breast a patch of dependent plumes, black in the centre, with yellowish-buff margins; thighs chestnut; under wing-coverts yellowish buff like the chest; axillaries and quill-lining dull chestnut, the feathers with a good deal of grey in them: "facial skin, margins of upper mandible, and nearly the whole of the lower mandible yellow, remainder of bill black; back of tarsus and soles yellow; claws yellowish brown; iris yellow" (*E. W. Oates*). Total length 13 inches, culmen 2, wing 5·35, tail 1·7, tarsus 8·75.

The *young birds* are very like the female, as determined by Mr. Oates and myself, but the whole back is variegated with yellowish-buff spots and markings, as well as the wings, so that the uniform brown mantle is a sign of the adult female, and the spotted mantle of a young bird. Mr. Everett gives the soft parts of a young female as follows:—"Legs and feet bright olive-green; bill greenish yellow at base, the culmen of a dark olive-brown tint; iris golden yellow."

Considerable variation in the tint of the cinnamon plumage of this species is observable in a series, and specimens from more southern localities are decidedly the darker and richer in colour. Thus Ceylonese and Belgaum birds are darker than those from N.W. India, and the Nicobar bird is also especially dark.

I believe the loss of the blackish streaks on the centre of the throat to be a sign of age, as old birds seem to lose the dark markings entirely, and have the centre of the throat and centre of the breast streaked merely with dark orange-rufous. It has been very difficult for me to determine what is the plumage of the adult

female of the present species. Colonel Legge does not describe this sex, and the only ornithologist who appears to have really known it is Mr. E. W. Oates, who in his 'Birds of Burmah' gives a full description.

It will be seen that the above description agrees very closely to that given by Mr. Oates of the adult female, with the exception that the eyebrow and sides of face are described by him as being pale reddish brown. Those which have the sides of the face yellowish brown streaked with black, like the one he described, are probably younger birds, and those which have these parts uniform rufous are older birds. It must not be overlooked that a female from Sadhya and another from Laynah are both in a cinnamon plumage, and exactly resemble the adult males. A bird in the striped plumage from San Mateo, and determined by Mr. Everett to be a female, is apparently moulting into the chestnut-backed plumage: although there is no evidence that the female becomes cinnamon like the male, it must not be forgotten that the majority of striped specimens have been determined, by excellent collectors, to be young birds.

*Hab.* From Amurland to China and Formosa, but not in Japan; the Burmese countries, Indian Peninsula, and Ceylon; Malacca; Malayan Archipelago to the Philippines and Celebes.

|                                               |                                                                               |                     |
|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------|
| a. ♂ ad. sk.                                  | Ceylon.                                                                       | Gould Coll.         |
| b, c. ♂; d-h. ♀<br>ad. et. juv. sk.           | Ceylon, March, July, Nov. ( <i>Nevill: Chapman</i> ).                         | Tweeddale Coll.     |
| i, k. ♂ ♀ ad. sk.                             | Coorg.                                                                        | Tweeddale Coll.     |
| l-o. ♂ ad.; p.<br>♀ ad. sk.                   | Belgaum, July to Sept., Nov.<br>( <i>E. A. Butler</i> ).                      | Hume Coll.          |
| q. Imm. sk.                                   | Western Ghats ( <i>Coussmaker</i> ).                                          | Gould Coll.         |
| r. Ad. sk.                                    | Mahableswar.                                                                  | Colonel Sturt [P.]. |
| s. ♂ ad. sk.                                  | Pokhur, Ajmere, Jan. 8 ( <i>Sir O. St. John</i> ).                            | Hume Coll.          |
| t, u. ♂ ad. et<br>juv. sk.                    | Hydrabad, Sind, Aug. ( <i>S. Doig</i> ).                                      | Hume Coll.          |
| v. ♂ ad. sk.                                  | Delhi, July ( <i>W. N. Chill</i> ).                                           | Hume Coll.          |
| w. ♂ ad. sk.                                  | Naini Tal.                                                                    | Pinwill Coll.       |
| x, y, z. ♂ ad.<br>sk.                         | Etawah, July to Sept.                                                         | Hume Coll.          |
| α. Imm. sk.                                   | Nepal.                                                                        | Hodgson Coll.       |
| β, γ. ♂ ad. et<br>juv. sk.                    | Darjeeling Terai, Nov., March<br>( <i>L. Mandelli</i> ).                      | Hume Coll.          |
| δ-η. ♂ ad.;<br>θ. ♀ ad. sk.                   | Calcutta, Aug., Dec., Jan., June<br>( <i>A. O. H. &amp; W. T. Blanford</i> ). | Hume Coll.          |
| κ, λ. ♀ ad. sk.                               | Dacca.                                                                        | Hume Coll.          |
| μ. ♂ ad. sk.                                  | Faridpur, May ( <i>J. R. Cripps</i> ).                                        | Hume Coll.          |
| π, ρ. ♂ ad.;<br>σ, τ, υ. ♀ ad.<br>et juv. sk. | Commilla, Tipperah.                                                           | Hume Coll.          |
| φ. Imm. sk.                                   | Assam ( <i>McClelland</i> ).                                                  | India Museum.       |
| χ. ♂ ad. sk.                                  | Dollah, Assam, May 8 ( <i>J. Cockburn</i> ).                                  | Hume Coll.          |
| ψ, ω. ♂ ad. sk.                               | Sadhya, Assam, April ( <i>J. Cockburn</i> ).                                  | Hume Coll.          |

|                                                                                  |                                                             |                                                   |
|----------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------|
| $w', x'$ . ♂ ad. ;<br>$y'$ . ♀ ad.                                               | Dibrughur, Assam, April to July<br>( <i>J. R. Cripps</i> ). | Hume Coll.                                        |
| $z', a'', b''$ . Ad. et<br>juv. sk.                                              | Cachar ( <i>J. Inglis</i> ).                                | Hume Coll.                                        |
| $c''$ . Ad. sk.                                                                  | Khasia Hills ( <i>Griffith</i> ).                           | India Museum.                                     |
| $d'', e''$ . ♂ ad.<br>sk.                                                        | Tonghoo, June 28 ( <i>R. G. W. R.</i> ).                    | Tweeddale Coll.                                   |
| $f', g''$ . ♂ ♀ ad.<br>sk.                                                       | Rangoon, June, July ( <i>R. G. W. R.</i> ).                 | Tweeddale Coll.                                   |
| $h'', i'', k'$ . ♂<br>ad. et juv. ; $l''$ ,<br>$m'', n''$ . ♀ ad.<br>et juv. sk. | Lower Pegu, April, Aug., Sept.,<br>Nov.                     | Oates Coll.                                       |
| $o''$ . ♂ ad. sk.                                                                | Amherst, July 1 ( <i>W. Davison</i> ).                      | Hume Coll.                                        |
| $p''$ . ♀ ad. sk.                                                                | Laynah, May 17 ( <i>W. Davison</i> ).                       | Hume Coll.                                        |
| $q''$ . ♀ ad. sk.                                                                | Sinzaway Forest, April 12 ( <i>C. T. Bingham</i> ).         | Hume Coll.                                        |
| $r''$ . ♀ ad. sk.                                                                | South of Yea, April 5 ( <i>W. Davison</i> ).                | Hume Coll.                                        |
| $s'', t''$ . ♂ ad. ;<br>$u''$ . ♀ ad. sk.                                        | Tavoy, May, June ( <i>W. Davison</i> ).                     | Hume Coll.                                        |
| $v''$ . ♂ ad. ; $w''$ ,<br>$x''$ . ♀ ad. sk.                                     | Bankasoon, April, May ( <i>W. Davison</i> ).                | Hume Coll.                                        |
| $y''$ . ♂ ad. sk.                                                                | Koesoom, May 6 ( <i>J. Darling</i> ).                       | Hume Coll.                                        |
| $z''$ . ♂ ad. sk.                                                                | Prov. Wellesley, Dec. ( <i>W. Darling</i> ).                | Dr. McKinlay [C.].                                |
| $a^1, b^1$ . ♂ ♀ ad. ;<br>$c^1, d^1$ . Juv. sk.                                  | Penang ( <i>Dr. Cantor</i> ).                               | India Museum.                                     |
| $e^1, f^1$ . ♂ ad. ;<br>$g^1, h^1, i^1$ . ♀<br>ad. sk.                           | Salangore, Feb., Oct., Nov. ( <i>W. Davison</i> ).          | Hume Coll.                                        |
| $k^1-o^1$ . ♂ ad. ;<br>$p^1-q^1$ . ♀ ad.<br>et juv. sk.                          | Malacca, July ( <i>W. Davison</i> ).                        | Hume Coll.                                        |
| $r^1, u^1, v^1$ . ♀ ad.<br>et juv. sk.                                           | Malacca ( <i>Dr. Maingay</i> ).                             | Tweeddale Coll.                                   |
| $w^1, x^1$ . Ad. sk.                                                             | Malacca, Aug. ( <i>R. G. W. R.</i> ).                       | Tweeddale Coll.                                   |
| $y^1$ . ♂ ♀ imm.<br>sk.                                                          | Andamans, Dec. ( <i>R. J. Wimberley</i> ).                  | Tweeddale Coll.                                   |
| $z^1, a^1$ . ♂ ad. et<br>juv. sk.                                                | Andamans, Aug. ( <i>R. J. Wimberley</i> ).                  | Hume Coll.                                        |
| $b^1$ . ♂ ad. sk.                                                                | Tillanchong, Nicobars, March 10<br>( <i>W. Davison</i> ).   | Hume Coll.                                        |
| $c^1, d^1$ . ♂ ad. ; $e^1$ .<br>♀ ad. sk.                                        | Sumatra, August ( <i>C. Bock</i> ).                         | Tweeddale Coll.                                   |
| $f^1$ . Ad. sk.                                                                  | Sumatra.                                                    | Wallace Coll.                                     |
| $g^1, h^1$ . ♂ ♀ ad.                                                             | Java ( <i>Diard</i> ).                                      | Salvin-Godman Coll.                               |
| $i^1$ . ♀ ad. sk.                                                                | Java.                                                       | Seebohm Coll.                                     |
| $k^1$ . Ad. sk.                                                                  | Java.                                                       | Tweeddale Coll.                                   |
| $l^1, m^1$ . Ad. sk.                                                             | Java ( <i>Horsfield</i> ).                                  | India Museum.                                     |
| $n^1$ . Imm. sk.                                                                 | Celebes.                                                    | (Types of <i>A. nebulosa</i> )<br>Tweeddale Coll. |
| $o^1$ . Ad. sk.                                                                  | Labuan.                                                     | Governor Ussher [P.].                             |
| $p^1$ . Juv. sk.                                                                 | Lumbidan.                                                   | Sir Hugh Lowe [P.].                               |
| $q^1$ . ♂ ad. sk.                                                                | Lawas River ( <i>Burbridge</i> ).                           | H. Veitch, Esq. [P.].                             |
| $r^1$ . ♂ ad. sk.                                                                | Zamboanga, Philippines ( <i>A. H. Everett</i> ).            | Tweeddale Coll.                                   |



|                                         |                                            |                     |
|-----------------------------------------|--------------------------------------------|---------------------|
| ♂, ♀. ♂ ad. et<br>♀ juv. sk.            | S. Leyte, July, Sept. (A. H. Everett).     | Tweeddale Coll.     |
| ♂, ♀. Ad. et<br>juv. sk.                | Manila, Luzon.                             | Gould Coll.         |
| ♂. ♀ juv. sk.                           | San Mateo, Luzon, Feb. (A. H. Everett).    | Tweeddale Coll.     |
| ♂, ♀. ♂ ad.;<br>♀ ad. sk.               | Monte Alban, Luzon, March (A. H. Everett). | Tweeddale Coll.     |
| ♂. Ad. sk.                              | Pekin, May 11 (R. Swinhoe).                | Seebohm Coll.       |
| ♂. Juv. sk.                             | Shanghai.                                  | J. Webb, Esq. [P.]. |
| ♂. ♂ ad. sk.                            | Amoy (R. Swinhoe).                         | Tweeddale Coll.     |
| ♂. Ad. sk.                              | Amoy, April (R. Swinhoe).                  | Seebohm Coll.       |
| ♂. ♂ ad. sk.                            | Canton, April 27 (R. Swinhoe).             | Seebohm Coll.       |
| ♂. ♂ ad. sk.                            | Canton (Bligh).                            | Seebohm Coll.       |
| ♂, ♀. ♂ ad. et<br>juv. sk.              | Canton.                                    | Tweeddale Coll.     |
| ♂, ♀. ♂ ad.; ♀-<br>♀ ad. et<br>juv. sk. | Formosa, Jan. to March (R. S.).            | Seebohm Coll.       |
| ♂. Ad. sk.                              | Hankow, summer (R. S.).                    | Seebohm Coll.       |
| ♂. Imm. sk.                             | N. Formosa, March (R. S.).                 | Salvin-Godman Coll. |

## 30. ZEBRILUS.

|                                                                |                      |
|----------------------------------------------------------------|----------------------|
| <i>Zebrilus</i> , <i>Bp. Consp. Av.</i> ii. p. 138 (1855)..... | Type.<br>Z. pumilus. |
| <i>Microcnus</i> , <i>Reichen. J. f. O.</i> 1877, p. 249 ..... | Z. pumilus.          |

*Range.* South America, from Guiana to Central Brazil.

1. *Zebrilus pumilus*.

Crabier des Philippines, *Briss. Orn.* v. p. 474, pl. xxvii. fig. 2 (1760);  
*D'Aubent. Pl. Enl.* viii. pl. 898.

Le Petit Crabier, *Buff. Hist. Nat. Ois.* vii. p. 395 (1780).

Le Petit Butor de Cayenne, *D'Aubent. Pl. Enl.* viii. pl. 763; *Buff. Hist. Nat. Ois.* vii. p. 430 (1780).

*Ardea pumila*, *Bodd. Tabl. Pl. Enl.* p. 54 (1783); *Gray, Hand-l. B.* iii. p. 31, no. 10154 (1871).

Zigzag Bittern, *Lath. Gen. Syn.* iii. pt. 1, p. 61 (1785: Cayenne).

Philippine Heron, *Lath. tom. cit.* p. 72.

*Ardea undulata*, *Gm. Syst. Nat.* i. p. 637 (1788); *Wagl. Syst. Av.*, *Ardea*, p. 192, sp. 41 (1827); *Schl. Mus. Pays-Bas, Ardeæ*, p. 56 (1863: Surinam); *Gray, Hand-l. B.* iii. p. 31, no. 10153 (1871).

*Ardea philippensis*, *Gm. Syst. Nat.* i. p. 644 (1788).

*Ardea radiolata*, *Wagl. Syst. Av.*, *Ardea*, p. 191, sp. 40 (1827).

*Tigrisoma undulatum*, *Gray, List Grall. Brit. Mus.* p. 82 (1844: Cayenne); *Pelz. Orn. Bras.* p. 302 (1871: Caiçara, Feb.; Guaporé, July).

*Botaurus pumilus*, *Gray, Gen. B.* iii. p. 557 (1847); *Reichen. J. f. O.* 1877, p. 249.

*Botaurus undulatus*, *Gray, Gen. B.* iii. p. 557 (1847).

*Zebrilus undulata*, *Bp. Consp. Av.* ii. p. 138 (1855).

*Zebrilus pumilus*, *Scl. & Salv. Nomencl. Av. Neotr.* p. 126 (1873);  
*Sharpe, Bull. B. O. Club*, v. no. xxxi. p. xiii (1895).

*Adult (dark phase).* General colour above slaty black, with indistinct wavy cross lines of dark sandy buff, these bands becoming



evanescent on the lower back and rump; upper tail-coverts uniform slaty black; tail also slaty black; wing-coverts like the back and waved in the same manner; bastard-wing and primary-coverts slaty black, with scarcely any indication of cross lines; quills slaty black, with a considerable amount of white at the base of the inner webs; crown of head very fully crested, slaty black; sides of face black, barred with wavy lines of sandy buff; cheeks and throat whiter, with blackish cross bars, more distinct on the lower throat; fore-neck and chest sandy buff, freckled with wavy lines of blackish, with here and there a broader bar of black; sides of the body sandy buff, with blackish vermiculations and central streaks of black; abdomen and under tail-coverts white, with a few wavy markings; under wing-coverts and axillaries white, with a tawny tinge. Total length 9.5 inches, culmen 1.65, wing 5.7, tarsus 2.2, tarsus 1.5.

*Rufous phase.* Differs from the dark phase described above in being much more coarsely vermiculated with rufous on the upper surface; the head black, but having a rufous forehead; the throat and under surface of body tawny rufous, becoming chestnut on the sides of the face and the neck-frill, and inclining to white on the lower abdomen and under tail-coverts; on the breast, abdomen, and flanks a few shaft-lines of black; under wing-coverts and axillaries white, with a slight tawny tinge. Total length 13 inches, culmen 1.5, wing 5.6, tail 2.2, tarsus 1.5.

The rufous birds appear to me to be perfectly adult; and I think it must be a mistake to consider them to be the young of the dark phase, as many authors have done. The dark-coloured specimens in the Museum also seem to me perfectly adult, but Prof. Schlegel has also described a young bird in the same plumage. Thus I regard the two birds as phases of one species, but it is quite probable that they may be specifically distinct.

*Hab.* Guiana to Central Brazil.

|               |                                     |                     |
|---------------|-------------------------------------|---------------------|
| a, b. Ad. sk. | South America.                      | Purchased.          |
| c. Ad. sk.    | Cayenne.                            | Purchased.          |
| d. Ad. sk.    | British Guiana, Oct. (E. Im-Thurn). | Salvin-Godman Coll. |

### 31. NANNOCNUS.

Type.

*Nannocnus*, Stejn. *Proc. U.S. Nat. Mus.* x. p. 291 (1887)..... *N. eurythmus*.

*Range.* From Eastern Siberia and Japan, south through China to Borneo.

#### 1. *Nannocnus eurythmus*.

*Ardea* (*Ardeola*) *cinnamomea* (*nec* Gm.), Schrenck, *Reis. Amurl.* p. 447, pl. 13. fig. 3 (1860: Amoor); Radde, *Reis. Sibir., Vög.* ii. p. 344 (1863).

*Ardetta eurythma*, Swinh. *Ibis*, 1873, p. 74, pl. 2 (Amoy; Shanghai), 1875, p. 132 (Chefoo), p. 455 (Hakodate); *id. Ibis*, 1876, p. 335; *Tacz. J. f. O.* 1875, p. 250 (Ussuri Delta, breeding); *id. Bull. Soc. Zool. France*, i. p. 259 (1876); David & Oust. *Ois. Chine*,

p. 447, pl. 119 (1877); *Blakist. & Pryer, Ibis*, 1878, p. 223 (Yezo); *Sharpe, Ibis*, 1879, p. 271 (Lawas River); *Blakist. & Pryer, B. Japan*, p. 118 (1882); *Blakist. Amended List B. Japan*, p. 12 (1884: Yezo; Yokohama); *Stejn. Proc. U.S. Nat. Mus.* x. p. 291 (Hakodate; Cochin China); *Everett, Journ. Straits Branch Asiat. Soc.* 1889, p. 190; *Styan, Ibis*, 1891, pp. 327, 493 (Lower Yangtse, ? breeding); *De La Touche, Ibis*, 1892, p. 489 (Foochow; Swatow); *Tacz. Mém. Acad. Imp. Sci. St. Pétersb.* (7) xxxix. p. 989 (1893); *Sharpe, Bull. B. O. Club*, iii. no. xvi. p. xxxi (1894).

*Ardetta sinensis* (nec Gm.), *Tacz. J. f. O.* 1874, p. 325 (Argun R., nesting); *Cab. t. c.* p. 325, note; *Sharpe, Ibis*, 1877, p. 24 (Bintulu).

*Botaurus eurhythmus*, *Reichen. J. f. O.* 1877, p. 245; *Seeb. B. Japan. Emp.* p. 227 (1890: Yezo; Hakodate; Yokohama).

*Ardeola eurythma*, *Bogd. Consp. Av. Imp. Ross.* fasc. i. p. 114 (1884).

*Ardetta riedeli*, *Meyer & Wiglesw. Abhandl. Mus. Dresden*, 1894-95, no. 4, p. 2 (1894); *iid. op. cit.* no. 8, p. 19 (1895); *Sharpe, Bull. B. O. Club*, v. no. xxxi. p. xiii (1895).

*Nannocnus eurhythmus*, *Sharpe, Bull. B. O. Club*, v. no. xxxi. p. xiii (1895).

**Adult male.** General colour above chestnut-brown; lesser wing-coverts and feathers round the bend of the wing also chestnut-brown; bastard-wing feathers chestnut, the outer ones blackish internally, with white on the outer margins; remainder of wing-coverts olive clay-colour, ashy near the ends of the feathers, the innermost greater coverts chestnut like the scapulars; innermost secondaries also washed with chestnut, remainder of quills and primary-coverts ashy brown, paler at the tips, which are fringed with whitish, the first primary margined with ochreous; tail dark brown; crown of head and nape dusky brown; sides of face, ear-coverts, and neck-frill maroon; a broad band of white running from the middle of the cheeks down the sides of the neck; fore part of cheeks, throat, and under surface of body ochreous buff; under tail-coverts, under wing-coverts; and axillaries white; on the throat some slight indications of longitudinal dusky spots; the feathers of the fore-neck elongated; on each side of the chest a patch of black feathers with ochreous margins: "bill blackish brown on culmen, yellowish brown on the rest, darker on the sides of upper mandible near tomia, light on sides of lower and on genys; cere and bare skin round eye purplish flesh-colour, tinged with green; legs and toes grass-green, yellow near the tarso-tibial joint and on the under surface of the tarsus; soles clay-coloured; claws light yellowish brown; iris straw-colour" (*R. Swinhoe*). Total length 12 inches, culmen 1.95, wing 5.9, tail 1.55, tarsus 2.

**Adult female.** Different from the male. Dusky reddish brown, spotted all over with ochraceous buff, the feathers externally spotted or notched with this colour; wing-coverts like the back, but largely edged and spotted with ochreous; head like the back; sides of face dull chestnut, with a band of white from the hinder cheeks down the sides of the neck; under surface of body ochreous buff, plentifully streaked with blackish brown, tinged with rufous; the lower abdomen

and under tail-coverts whiter; under wing-coverts deep ochreous, with ashy bases; a patch of brown feathers at the sides of the breast, all edged with ochre. Total length 12 inches, culmen 1.95, wing 5.5, tail 1.45, tarsus 1.9.

*Young.* Like the old female, but blackish brown above, the wing-coverts maroon-chestnut, and all the upper parts spotted with white instead of ochreous: "bill bright yellow, tinged with green; culmen black; feet yellowish green; iris golden yellow" (A. H. Everett).

*Hab.* From Eastern Siberia to the Japanese Islands, throughout China to Borneo and Celebes.

|                           |                                         |                           |
|---------------------------|-----------------------------------------|---------------------------|
| a, b. ♂ ad. et ♀ juv. sk. | Hakodadi, June, July (Capt. Blakiston). | Tweeddale Coll.           |
| c, d. Imm. sk.            | Yokohama (H. Pryer).                    | Seeböhm Coll.             |
| e, f, g. Ad. et imm. sk.  | Chefoo, May, June (R. Swinhoe).         | Tweeddale Coll.           |
| h, i. ♂ ad. sk.           | Chefoo, May (R. S.).                    | Seeböhm Coll.             |
| k. Ad. sk.                | Amoy (R. S.).                           | Seeböhm Coll.             |
| l. Imm. sk.               | Labuan.                                 | H. Veitch, Esq. [P.].     |
| m. Imm. sk.               | Sandakan, N. Borneo (H. Pryer).         | Tweeddale Coll.           |
| n. ♀ imm. sk.             | Bintulu, Sarawak.                       | A. H. Everett, Esq. [C.]. |
| o. Imm. sk.               | Baram, Sept. 1.                         | A. H. Everett, Esq. [C.]. |

### 32. ARDEIRALLUS.

*Ardeiralla*, Verr. MSS. (teste Hartl. & Bp.)..... Type. A. sturmi.

*Range.* Confined to Africa.

#### 1. *Ardeirallus sturmi*.

*Ardea sturmi*, Wagl. Syst. Av., *Ardea*, p. 191, sp. 37 (1827); Gray & Mitchell, Gen. B. iii. p. 556, pl. 150 (1847); Hartl. Orn. W.-Afr. p. 224 (1857); id. J. f. O. 1861, p. 270; Schl. Mus. Pays-Bas, *Ardees*, p. 45 (1863: S. Africa; Gold Coast; Senegal); Gurney, *Ibis*, 1868, p. 256; Gray, Hand-l. B. iii. p. 30, no. 10145 (1871); Heugl. Orn. N.O.-Afr. ii. Abth. i. p. 1078 (1873: E. Kordofan); Holub & Pelz. Beitr. Orn. Südafr. p. 276 (1882: Zambesi; Pantamatenka); Sjöstedt, K. Sv. Vet.-Akad. Handl. Stockh. xxvii. p. 34 (1895: Cameroons); id. Mitth. deutsch. Schutzgeb. viii. p. 16 (1896).

*Cancrophaga gutturalis*, Smith, Rep. S. Afr. Exped., App. p. 57 (1836).

*Egretta plumbea*, Swains. An. in Menag. p. 334 (1837).

*Ardetta sturmi*, Gray, List Grallæ in Brit. Mus. p. 83 (1844: Gambia); Reichenb. Handb., Grall. tab. xxx. fig. 2392 (1851); Bp. Conspect. Av. ii. p. 131 (1855); Sharpe, *Ibis*, 1869, p. 387 (Fantee); id. P. Z. S. 1870, p. 150 (Rio Dande); Shelley, P. Z. S. 1881, p. 599 (Pangani R.); id. *Ibis*, 1882, p. 364 (Mashoonas); id. *Ibis*, 1888, p. 304 (Jipi; Tangani); Heine & Reichen. Nomencl. Mus. Hein. p. 308 (1890); Meade-Waldo, *Ibis*, 1890, p. 430 (Laguna, Canaries), 1893, p. 198; Reichen. Vög. deutsch-Ost-Afr. p. 64 (1894).

*Ardea gutturalis*, *Smith, Ill. Zool. S. Afr., Birds*, pl. 91 (1843); *Gray, Gen. B.* iii. p. 556 (1847); *Layard, B. S. Afr.* p. 310 (1867: Zambesi).

*Ardetta gularis*, *Reichenb. Handb., Grall.* tab. xli. fig. 1024 (1851).

*Herodias sturmi*, *Licht. Nomencl. Av. Mus. Berol.* p. '89 (1854); *Hartl. J. f. O.* 1854, p. 290.

*Ardetta gutturalis*, *Bp. Consp. Av.* ii. p. 131 (1855); *id. C. R.* xliii. p. 991 (1856); *Gurney, Ibis*, 1860, p. 221 (Natal).

*Ardeola pusilla* (*nec V.*), *Heugl. Syst. Uebers.* p. 59 (1856).

*Ardea eulopha*, *Heugl. J. f. O.* 1862, p. 407.

*Ardeola sturmi*, *Degl. et Gerbe, Orn. Eur.* ii. p. 305 (1867: "Pyrenees").

*Ardeiralla sturmi*, *Gurney in Anderss. B. Dam. Ld.* p. 291 (1872: Damara; Ondonga; Ovaquenyama, breeding).

*Botaurus sturmi*, *Reichen. J. f. O.* 1877, p. 245; *Bocage, Orn. Angola*, p. 447 (1881: Biballa; Landana); *Hartl. Abhandl. Nat. Ver. Bremen*, viii. p. 215 (1883: Lado); *Sharpe, Journ. Linn. Soc., Zool.* xvii. p. 440 (1884: Semmio).

*Butorides sturmi*, *Sharpe in Oates's Matabele Land*, App. B, p. 326 (1881).

*Ardeirallus sturmi*, *Sharpe, Bull. B. O. Club*, v. no. xxxi. p. xiii (1895).

**Adult male.** General colour above slaty grey, the feathers of the sides of the neck, hinder crown, and nape elongated and full; wings and tail slaty grey, like the back; sides of face slaty grey; the fore part of the cheeks and malar line blackish; under surface of body ochreous buff, whiter on the throat and fore-neck and deepening in colour on the abdomen; a broad streak of slaty black down the centre of the throat, and the feathers of the lower throat and fore-neck with very broad slaty-black centres, the long feathers of the fore-neck being also laterally slaty black; on each side of the chest a patch of tawny-buff feathers, with slaty-black centres; the feathers of the breast, abdomen, and thighs more or less tawny, with longitudinal slaty-black centres, the under tail-coverts also powdered or mesially tipped with slaty black; sides of body uniform slate-colour, like the axillaries and under wing-coverts; thighs tawny buff in front, slaty grey behind: "bill almost black, shading at the base into bluish green, which is the colour of the skin surrounding the eyes and at the corners of the mouth; tibia, front of tarsus, and upper surface of toes yellowish brown, with a greenish tinge on the tibia; the back of the tarsus and the soles of toes bright yellow; iris red or reddish brown" (*C. J. Andersson*). Total length 12·5 inches, culmen 1·75, wing 6·5, tail 2·2, tarsus 1·8, middle toe and claw 2·05.

**Adult female.** Similar to the male, but rather more rufous underneath. Total length 11 inches, culmen 1·6, wing 6·3, tail 2, tarsus 1·7.

**Young.** Rather lighter and more slaty on the upper surface, and easily distinguished by having the whole of the feathers of the back and the wing-coverts margined or tipped with sandy buff, broader on the wing-coverts; under surface of body rufescent, with the streaks not nearly so broad and the gular stripe consisting of triangular blackish-brown spots.

*Hab.* The greater part of Africa, extending occasionally to the Canaries, and even said to have occurred in the Pyrenees.

|                         |                                                  |                                                |
|-------------------------|--------------------------------------------------|------------------------------------------------|
| a. Ad. sk.              | River Gambia.                                    | Governor Randall [C.]                          |
| b. Ad. sk.              | Bathurst, River Gambia.                          | Shelley Coll.                                  |
| c. Ad. sk.              | Fantee.                                          | Shelley Coll.                                  |
| d. Ad. sk.              | Cape Coast Castle (G. E. S.).                    | Shelley Coll.                                  |
| e. ♀ ad. sk.            | Accra (J. Smith).                                | Shelley Coll.                                  |
| f. ♂ ad. sk.            | Rio Dande, Angola, May 21.                       | Monteiro Coll.                                 |
| g. ♀ ad. sk.            | Ondonga, Ovampo-land, April 2 (C. J. Andersson). | Gurney Coll.                                   |
| h. Ad. sk.              | Semmio, Niam Niam Country, March.                | F. Bohndorff [C.]                              |
| i. ♂ ad.; k. ♀ juv. sk. | Lamu, Aug.                                       | F. J. Jackson, Esq. [P.]                       |
| l. Juv. sk.             | Pangani River (Sir J. Kirk).                     | Shelley Coll.                                  |
| m. ♀ ad. sk.            | Zomba Plain, Nyasa-land, April 22 (A. Whyte).    | H. H. Johnston, Esq., C.B. [P.]                |
| n. Ad. sk.              | Matabele-land (F. Oates).                        | W. E. & C. G. Oates, Esqrs. [P.]               |
| o. Ad. sk.              | South Africa.                                    | Sir A. Smith. (Type of <i>A. gutturalis</i> .) |
| p. Ad. sk.              | "Pyrenees."                                      | Gould Coll.                                    |

### 33. DUPETOR.

Type.

|                                                                              |                 |
|------------------------------------------------------------------------------|-----------------|
| Dupetor, <i>Heine &amp; Reichen. Nomencl. Mus. Hein.</i> p. 308 (1890) ..... | D. flavicollis. |
| Xanthocnus, <i>Sharpe, Bull. B. O. Club</i> , iii. p. xxxvii (1894) .....    | D. flavicollis. |

*Range.* China; India and Ceylon; Burma; Malayan Region and Islands; Australia.

#### Key to the Species.

- a. With chestnut spots down the centre of the throat; the lower throat varied with bright chestnut; abdomen slate-colour; adults with black cheeks, young with red ..... *flavicollis*, p. 247.
- b. With black spots down the upper throat; lower throat black or slightly varied with brown, not bright chestnut; abdomen brown or blackish; cheeks black in young and old.
  - a'. Abdomen brown; throat and fore-neck distinctly mottled with pale reddish brown ..... *gouldi*, p. 249.
  - b'. Abdomen slaty grey; throat and fore-neck slightly mottled with reddish brown .... *neophilus*, p. 250.
  - c'. Abdomen black; throat and fore-neck almost uniform black, with a very faint and scarcely perceptible shade of brown .. *melas*, p. 251.

1. *Dupetor flavicollis*.

- Yellow-necked Heron, *Lath. Gen. Suppl.* i. p. 239 (1787).  
*Ardea flavicollis*, *Lath. Ind. Orn.* ii. p. 701 (1790); *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 411 (1817); *Horaf. Trans. Linn. Soc.* xiii. p. 189 (1821: Java); *Wagl. Syst. Av.*, *Ardea*, p. 180, sp. 16 (1827); *Gray & Hardw. Illustr. Ind. Zool.* i. pl. 66, fig. 2 (1833); *Jerd. Illustr. Ind. Orn.* pl. 16 (1847); *Gray, Gen. B.* iii. p. 556 (1847); *Schl. Mus. Pays-Bas, Ardeæ*, p. 45 (1863); *Gray, Hand-l. B.* iii. p. 30, no. 10144 (1871. pt.); *Hume, Nests & Eggs Ind. B.* p. 621 (1873); *Bruggem. Abh. Nat. Ver. Bremen*, v. p. 97 (1876: Celebes); *Rosenb. Malay Archip* pp. 220, 324, 373 (1878-79).  
*Ardea nigra*, *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 417 (1817); *id. Enc. Meth.* in. p. 1108 (1823).  
*Ardea picta*, *Raf. Trans. Linn. Soc.* xiii. p. 326 (1822: Sumatra); *Gray, Gen. B.* iii. p. 556 (1847).  
*Ardea australis*, *Cuv. Mus. Paris*; *Less. Traité*, p. 572 (1831); *Pucher. Rev. et Mag. Zool.* 1851, p. 375.  
*Ardea binnenta*, *Cuv. Mus. Paris*; *Less. Traité*, p. 574 (1831: Java); *Pucher. Rev. et Mag. Zool.* 1851, p. 374; *Martens, J. f. O.* 1866, p. 28.  
*Ardetta flavicollis*, *Gray, List Grallæ Brit. Mus.* p. 84 (1844); *Blyth, Cat. B. Mus. As. Soc.* p. 282 (1849: Chusan; Calcutta); *Bp. Consp. Av.* ii. p. 131 (1855); *Jerd. B. Ind.* iii. p. 753 (1864: Malabar; Madras); *Swinh. P. Z. S.* 1871, p. 413 (Foochow; Hankow); *Holden. P. Z. S.* 1872, p. 478 (Ceylon); *Blyth & Wald. B. Burm.* p. 160 (1875: Tonghoo); *Hume, Str. F.* iii. p. 191 (1875: Pegu); *Wald. Trans. Z. S.* ix. p. 236 (1875: Manila); *David & Oust. Ois. Chine*, p. 416 (1877: Central and Southern China, summer, Southern Chenai); *Tweedd. P. Z. S.* 1877, p. 384 (Batuan); *Hume & Davison, Str. F.* vi. p. 483 (1878: Tenasserim); *Hume, Str. F.* viii. p. 71 (Singapore), p. 114 (1879); *Doig, t. c.* p. 376 (L. Narra, breeding); *Bingham, Str. F.* ix. p. 198 (1880: Kankaryit); *Kelham, Ibis*, 1882, p. 195 (Canton); *Davison, Str. F.* x. p. 416 (1883: Wynad); *Murray, Vertebr. Faun. Sind*, p. 273 (1884); *Seebohm, Ibis*, 1884, p. 268 (Kaukiang); *Wardlaw-Ramsay, t. c.* p. 335 (Manila); *Styan, Ibis*, 1891, pp. 327, 492 (Lower Yangtse, July); *De La Touche, Ibis*, 1892, p. 489 (Swatow; Foochow); *Styan, Ibis*, 1893, p. 434 (Hainan).  
*Botaurus flavicollis*, *Reichenb. Syst. Nat.* p. xvi (1852); *Reichen. J. f. O.* 1877, p. 245.  
*Herodias flavicollis*, *Licht. Nomencl. Av. Mus. Berol.* p. 89 (1854).  
*Ardetta binnenta*, *Bp. Consp. Av.* ii. p. 132 (1855).  
*Ardaralla flavicollis*, *Salvad. Ucc. Born.* p. 353 (1874); *Leggo, B. Ceylon*, p. 1150 (1880: migrant); *Salvad. Ann. Mus. Gen.* xviii. p. 335 (1882), *id. Orn. Papuana*, iii. p. 364 (1882: pt.); *Oates, Handl. B. Brit. Mus.* ii. p. 255 (1883); *Blasius, J. f. O.* 1884, p. 219 (S. E. Borneo); *Vorderm. Nat. Tydschr. Nederl. Ind.* xiv. p. 23 (1886: Borneo); *id. op. cit.* xlix. p. 417 (1889: Sumatra); *Eschert, Journ. Straits Branch As. Soc.* 1889, p. 190; *Oates, ed. Hume's Nests & Eggs Ind. B.* iii. p. 251 (1890).  
*Dupetor flavicollis*, *Heine & Reichen. Nomencl. Mus. Hein.* p. 308 (1890: Sumatra); *Sharpe, Bull. B. O. Club*, v. no. xxxi. p. xii (1895).  
*Xanthoceros flavicollis*, *Sharpe, Bull. B. O. Club*, iii. no. xvii. p. xxxvii (1894).

*Adult male.* General colour above dark slaty grey, the feathers of the back and scapulars somewhat pointed and with a slight hoary



gloss; wings and tail blackish, glossed with slate-colour on the coverts, and with green on some of the latter and on the quills; crown of head and crest-plumes slaty grey; sides of face and cheeks black, the latter slightly mottled with rufous; from the hinder part of the cheeks a band of golden straw-colour runs down the sides of the neck, the lower feathers being elongated; the throat and fore-neck prettily variegated with chestnut, black, and white, the chestnut predominating on the outer web of the feathers and the white on the inner web, with a longitudinal streak of black at the end of the latter, the long overlapping feathers on the sides of the chest being slaty grey with white margins, so that the general appearance of the throat and chest is streaked; remainder of under surface of body slaty grey, including the under wing-coverts, axillaries, and quill-lining: "bill dusky reddish brown, lighter below; facial skin purplish brown; eyelids bluish; feet dark brown; claws dark horn-colour; iris golden brown or pale red" (*E. W. Oates*). Total length 20 inches, culmen 3.3, wing 8, tail 2.5, tarsus 2.65, middle toe and claw 3.

*Adult female.* Does not differ from the male. Total length 20 inches, culmen 3.2, wing 8, tail 2.7, tarsus 2.6, middle toe and claw 2.9.

The slaty-grey shade in the plumage appears to be a sign of the breeding-season, as some of the winter specimens are black, with a greenish gloss on the upper surface.

*Young birds* are much browner than the adults, and can immediately be recognized by their more freckled appearance, the feathers of the upper surface having ochraceous margins. The mottling of the rufous on the neck is much as in the adult birds, but there is more white and less rufous, and the chest-feathers are much more broadly edged with white; the breast is dusky brown as well as the sides of the body; the abdomen is white; the sides of the face and ear-coverts are chestnut, with a little streak of white at the base of the mandible.

*Nestling.* Similar in colour to the young bird described above, but very much shaded with rufous, and having a great deal of rufous on the sides of the face; the crown covered with down of an ochreous colour, the throat and chest very rufous.

*Hab.* From Southern and Central China below the River Yangtze, through the Burmese countries to the Malay Peninsula, Sumatra, Java, Borneo, the Philippines, and Celebes. Occurring in Sind, South-western India, and Ceylon.

|                              |                                                     |                        |
|------------------------------|-----------------------------------------------------|------------------------|
| <i>a, b.</i> ♂ ♀ imm. sk.    | Eastern Narra, Sind, May ( <i>S. Doig</i> ).        | Hume Coll.             |
| <i>c.</i> Juv. sk.           | Calicut.                                            | Hume Coll.             |
| <i>d.</i> Ad. sk.            | Anjango, Travancore, Dec. ( <i>F. Bourdillon</i> ). | Hume Coll.             |
| <i>e, f.</i> Ad. et juv. sk. | Ceylon ( <i>S. Chapman &amp; H. Nevill</i> ).       | Tweeddale Coll.        |
| <i>g.</i> ♀ imm. sk.         | Ceylon, Dec. 18 ( <i>W. V. Legge</i> ).             | Dr. R. B. Sharpe [P.]. |
| <i>h.</i> Imm. sk.           | Calcutta, April.                                    | Hume Coll.             |
| <i>i-m.</i> Ad. sk.          | Dacca.                                              | Hume Coll.             |
| <i>n.</i> ♂ ad. sk.          | Faridpur, June 17 ( <i>J. R. Cripps</i> ).          | Hume Coll.             |



|                                                       |                                                             |                           |
|-------------------------------------------------------|-------------------------------------------------------------|---------------------------|
| <i>o.</i> Juv. sk.                                    | Assam.                                                      | Tweeddale Coll.           |
| <i>p.</i> ♂ ad. sk.                                   | N. Khasia Hills, March ( <i>A. W. Chennell</i> ).           | Tweeddale Coll.           |
| <i>q.</i> Ad. sk.                                     | Dilkoosha, Cachar ( <i>J. Inglis</i> ).                     | Hume Coll.                |
| <i>r-u.</i> Ad. et juv. sk.                           | Comilla, Tippera.                                           | Hume Coll.                |
| <i>v, w.</i> ♂ ad. et ♀ juv. sk.                      | Lower Pegu, July ( <i>E. W. O.</i> ).                       | Oates Coll.               |
| <i>x.</i> ♂ ad. sk.                                   | Eastern Pegu Hills, April 23 ( <i>E. W. Oates</i> ).        | Hume Coll.                |
| <i>y, z.</i> ♂ ad. et juv. sk.                        | Tonghoo, July, Sept. ( <i>R. G. W. R.</i> ).                | Tweeddale Coll.           |
| <i>a'.</i> ♂ ad. sk.                                  | Rangoon, July 7 ( <i>R. G. W. R.</i> ).                     | Tweeddale Coll.           |
| <i>b'.</i> Ad. sk.                                    | Kaukaryit, Tenasserim, July 23 ( <i>J. Darling</i> ).       | Hume Coll.                |
| <i>c'.</i> ♂ ad. sk.                                  | Thoungyeen Valley, July 3 ( <i>C. T. Bingham</i> ).         | Hume Coll.                |
| <i>d'.</i> ♀ ad. sk.                                  | Thatone, Aug. 18 ( <i>W. Davison</i> ).                     | Hume Coll.                |
| <i>e'-g'.</i> ♂ ♀ ad. sk.                             | Amherst, July 25 ( <i>W. D.</i> ).                          | Hume Coll.                |
| <i>h', i'.</i> ♀ ad. et juv. sk.                      | Bankasoon, April ( <i>W. D.</i> ).                          | Hume Coll.                |
| <i>k'.</i> Ad. sk.                                    | Cochin China.                                               | M. E. Pierre [P.].        |
| <i>l'.</i> Ad. sk.                                    | Penang ( <i>Dr. Cantor</i> ).                               | India Museum              |
| <i>m'.</i> ♂ ad. sk.                                  | At sea between Penang and Malacca, Nov. 9 ( <i>W. D.</i> ). | Hume Coll.                |
| <i>n'.</i> Ad. sk.                                    | Malacca ( <i>Dr. Maingay</i> ).                             | Tweeddale Coll.           |
| <i>o'.</i> Ad. sk.                                    | Malacca.                                                    | W. Harvey, Esq. [P.].     |
| <i>p'.</i> ♀ juv. sk.                                 | Singapore, Jan. 10 ( <i>W. D.</i> ).                        | Hume Coll.                |
| <i>q', r'.</i> Ad. et pull. sk.                       | Java.                                                       | Tweeddale Coll.           |
| <i>s'.</i> Ad. sk.                                    | Labuan.                                                     | A. H. Everett, Esq. [C.]. |
| <i>t'-w'.</i> Ad. sk.                                 | Shanghai ( <i>Capt. Ince</i> ).                             | Mrs. Ince [P.].           |
| <i>x', y'.</i> Ad. sk.                                | Foochow.                                                    | Seebohm Coll.             |
| <i>z'-b''.</i> ♂ ♀ ad. sk.                            | Ningpo.                                                     | J. R. Reeves, Esq. [P.].  |
| <i>c'', d''.</i> ♂ juv. et ♀ ad. sk.                  | Ningpo, May ( <i>R. Swinhoe</i> ).                          | Seebohm Coll.             |
| <i>e''-g''.</i> ♂ ♀ ad. sk.                           | Chekiang, May.                                              | Tweeddale Coll.           |
| <i>h'', i''.</i> Ad. sk.                              | Canton.                                                     | Tweeddale Coll.           |
| <i>k'', l''.</i> ♂ ♀ ad.; <i>m'', n''.</i> ♀ imm. sk. | Kiukiang, July.                                             | F. W. Styan, Esq. [P.].   |
| <i>o''.</i> Juv. sk.                                  | Manila, Luzon ( <i>Maitland Heriot</i> ).                   | Tweeddale Coll.           |
| <i>p'', q''.</i> ♂ ♀ ad. sk.                          | Butuan, May ( <i>A. H. Everett</i> ).                       | Tweeddale Coll.           |
| <i>r''.</i> Ad. sk.                                   | Celebes.                                                    | Tweeddale Coll.           |

2. *Dupetor gouldi*.

*Ardetta flavicollis* (*nec Lath.*), *Gould, B. Austr.* vi. pl. 65 (1848); *Macgill. Voy. Rattlesn.* ii. p. 355 (1852); *Gray, Cat. B. New Guin.* p. 62 (1859); *id. P. Z. S.* 1860, p. 197; *Sharpe, Journ. Linn. Soc., Zool.* xiii. p. 504 (1877: Port Moresby); *D'Alb. & Salvad. Ann. Mus. Gen.* xiv. p. 132 (1879: Fly River), p. 668 (Ke Bandan).

*Ardetta gouldi*, *Ep. Consp. Av.* ii. p. 132 (1855); *Finsch, New-Guinea*, p. 183 (1865).

*Ardea flavicollis australis*, *Schl. Mus. Pays-Bas, Ardeæ*, p. 46 (1863).

*Butorides flavicollis* (*nec Lath.*), *Gould, Handb. B. Austr.* ii. p. 46 (1865); *Ramsay, Ibis*, 1866, p. 335 (Port Denison); *id. Pr. Linn. Soc. N. S. W.* i. pp. 192, 375 (1876), ii. p. 199 (1877); *id. P. Z. S.* 1877, p. 343 (Queensland); *D'Alb. Ann. Mus. Gen.* x. p. 20 (1877: Kataw, Fly River); *Ramsay, Pr. Linn. Soc. N. S. W.* iii. p. 299 (1878: Laloki River), iv. p. 102 (1879: Port Moresby); *id. Tab. List Austr. B.* p. 21 (1888); *id. Pr. Linn. Soc. N. S. W.* (2) ii. p. 172 (1888: Derby, N.W. Australia); *North, Nests & Eggs Austr. B.* p. 321, pl. 18, fig. 4 (1889).

*Ardea flavicollis* (*nec Lath.*), *Schl. Nederl. Tijdschr. Dierk.* iii. p. 348 (1866: Great Ke; Aru).

*Butorides javanica* (*nec Horsf.*), *Scl. P. Z. S.* 1873, p. 696 (Sorong).

*Ardeiralla flavicollis*, *Salvad. Orn. Pap.* iii. p. 364 (1882: pt.).

*Xanthocnus gouldi*, *Sharpe, Bull. B. O. Club*, iii. no. xvii. p. xxxvii (1894).

*Dupetor gouldi*, *Sharpe, Bull. B. O. Club*, v. no. xxxi. p. xiii (1895).

**Adult.** Similar to *D. flavicollis*, but differing in the somewhat browner colour, especially on the wings, being paler and browner on the under surface, and especially distinguished by having the central row of spots down the throat black instead of chestnut, and having an admixture of dull reddish brown instead of chestnut on the fore-neck: "bill dark horn-colour; feet olive-brown; iris yellow" (*J. Gould*). Total length about 24 inches, culmen 3.35, wing 8.9, tail 3.4, tarsus 2.65, middle toe and claw 2.7.

**Adult female.** Decidedly duller and browner on the back than the male, the black throat-spots not so distinct, and with a very evident admixture of rufous-brown down the throat and fore-neck. Total length about 21 inches, wing 8.3, tail 2.85, tarsus 2.65, middle toe and claw 2.5.

**Young.** Distinguished from the adults by the ochreous margins to the feathers of the upper surface, and recognizable from the young of *D. flavicollis* by the black instead of rufous cheeks and sides of face, and by the dingy brown or blackish, instead of rufous, mottling on the throat and fore-neck.

**Hab.** Australia.

|                                          |                                                      |                          |
|------------------------------------------|------------------------------------------------------|--------------------------|
| <i>a.</i> Ad. sk.                        | Australia.                                           | Gould Coll.              |
| <i>b.</i> Juv. sk.                       | New South Wales.                                     | Hume Coll.               |
| <i>c, d, e.</i> Ad. ; <i>f.</i> Juv. sk. | Queensland.                                          | Salvin-Godman Coll.      |
| <i>g.</i> ♀ ad. sk.                      | Port Essington.                                      | J. B. Jukes, Esq. [P.].  |
| <i>h.</i> ♂ imm. sk.                     | Derby, N.W. Australia ( <i>T. H. Bowyer Bower</i> ). | Capt. Bowyer Bower [P.]. |

### 3. *Dupetor nesophilus*. (Plate III. fig. 1.)

*Ardea flavicollis* (*nec Lath.*), *Scl. P. Z. S.* 1877, p. 113 (Duke of York Isl.); *Finsch, P. Z. S.* 1879, p. 14 (New Britain).

*Ardetta flavicollis* (*nec Lath.*), *Finsch, Vög. der Südsee*, p. 21 (1884: New Britain).

*Ardeirallus nesophilus*, Sharpe, *Bull. B. O. Club*, iii. no. xvi. p. xxxii (1894).

*Xanthocnus nesophilus*, Sharpe, *Bull. B. O. Club*, iii. no. xvii. p. xxxvii (1894).

*Dupetor nesophilus*, Sharpe, *Bull. B. O. Club*, v. no. xxxi. p. xiii (1895).

*Adult*. Black like *D. melas*, with black cheeks and sides of face like that species and *D. gouldi*: under surface also blackish as in *D. melas*, but slightly washed with slaty grey, the long feathers of the fore-neck edged with white, and the throat-markings slightly varied here and there with pale brown. Total length about 22 inches, culmen 3.1, wing 8.2, tail 3.2, tarsus 2.6, middle toe and claw 2.4.

*Hab.* New Britain and Duke of York Island.

- |              |                                      |                                       |
|--------------|--------------------------------------|---------------------------------------|
| a. ♂ ad. sk. | Duke of York Island (Klein-schmidt). | Dr. R. B. Sharpe<br>[P.]              |
| b. Ad. sk.   | Duke of York Island (G. Brown).      | Tweeddale Coll.<br>(Type of species.) |

#### 4. *Dupetor melas*. (Plate III. fig. 2.)

*Ardetta flavicollis* (nec Lath.), Wallace, *P. Z. S.* 1863, p. 35 (Bouru); *Blasius & Nerckh. Verh. z.-b. Ges. Wien*, 1882, p. 431 (Amboina).

*Ardea* (*Ardetta*) *flavicollis* (nec Lath.), Gray, *P. Z. S.* 1863, p. 364 (Batchian).

*Ardetta melæna*, *Salvad. Atti R. Acad. Sci. Torino*, xiii. p. 1187 (1878: Sanghir; Halmahéra).

*Ardeiralla melæna*, *Salvad. Ann. Mus. Gen.* xviii. p. 335 (1882).

*Ardeiralla flavicollis* (nec Lath.), *Salvad. Ann. Mus. Genov.* viii. p. 795 (1875: Halmahéra); Meyer, *Sitz. Abhandl. ges. Isis, Dresden*, 1884, Abth. i. p. 57 (Siao).

*Xanthocnus melas*, Sharpe, *Bull. B. O. Club*, iii. no. xvii. p. xxxvii (1894).

*Dupetor melas*, Sharpe, *Bull. B. O. Club*, v. no. xxxi. p. xiii (1895).

*Adult male*. Similar in form to *D. flavicollis*, but very much blacker on the upper surface; the under surface of the body almost entirely black, with narrow whitish margins to the feathers of the fore-neck, and a scarcely perceptible shade of rufous brown on some of the feathers of the lower throat; cheeks and sides of face entirely black. Total length 21 inches, culmen 3.3, wing 8.5, tail 2.9, tarsus 2.5, middle toe and claw 2.55.

*Young*. Dark like the young of *D. gouldi*, and having blackish cheeks, and the mottlings of the throat dull brown, not rufous as in *D. flavicollis*.

*Hab.* Molucca Islands.

- |                            |           |               |
|----------------------------|-----------|---------------|
| a, b. ♂ ad. et<br>juv. sk. | Batchian. | Wallace Coll. |
| c. Juv. sk.                | Morotai.  | Wallace Coll. |
| d. ♂ juv. sk.              | Bouru.    | Wallace Coll. |

## 34. ERYTHROPHOYX

Type.

*Erythrophoyx*, Sharpe, *Bull. B. O. Club*, iii. no. xvii.  
p. xxxviii (1894) ..... *E. woodfordi*.

*Range*. Solomon Islands and the Moluccas.

*Key to the Species.*

- a. Above dark chestnut; abdomen sandy buff;  
under tail-coverts also sandy buff ..... *woodfordi*, p. 252.  
b. Above dark brown; abdomen ashy fulvous;  
under tail-coverts dark grey ..... *pratermissa*, p. 253.

1. *Erythrophoyx woodfordi*. (Plate IV.)

*Ardeiralla woodfordi*, Grant, *P. Z. S.* 1888, p. 202 (Guadalcanar);  
*Salvad. Agg. Orn. Papuasia*, iii. p. 207 (1891).

*Erythrophoyx woodfordi*, Sharpe, *Bull. B. O. Club*, iii. no. xvii.  
p. xxxviii (1894); *id. op. cit.* v. no. xxi. p. xiii (1895).

*Adult female* (type of species). General colour above uniform dark chestnut; the wing-coverts like the back, but slightly washed with straw-colour, the greater coverts blackish on their inner webs; bastard-wing, primary-coverts, and quills slaty black, the innermost chestnut at the tips and along the outer webs; tail-feathers black; crown of head slaty black; the hind-neck chestnut, as also the sides of the crown and ear-coverts; the cheeks, sides of face, and neck-frill deep tawny, the throat and breast also tawny rufous, a little whiter towards the chin; the throat with a few longitudinal spots of blackish; sides of the breast deep chestnut; the abdomen and under tail-coverts sandy buff with a slight vinous tinge, especially on the flanks; the under tail-coverts slightly freckled with blackish markings; under wing-coverts tawny rufous mixed with chestnut, the lower greater coverts slaty grey like the quill-lining: "bill brown, yellow on the lower mandible; feet greyish brown; iris yellow" (*C. M. Woodford*). Total length 18 inches, culmen 2.9, wing 7.6, tail 2.5, tarsus 2.9, middle toe and claw 2.0.

*Young*. Blackish brown, broadly edged with sandy buff, less distinct on the crown, but very broad and inclining to orange-buff on the wing-coverts; throat white, with a narrow mesial line of small black streaks, more scattered on the lower throat and fore-neck, where the spots are more distinct; abdomen white; sides of upper breast sandy buff, mottled with blackish bars: "bill black, the lower mandible grey; feet light brown; iris yellow" (*C. M. Woodford*).

*Hab.* Solomon Islands.

- |               |                                |                                                 |
|---------------|--------------------------------|-------------------------------------------------|
| a. ♀ ad. sk.  | Aola, Guadalcanar,<br>Aug. 30. | C. M. Woodford, Esq. [C.]<br>(Type of species.) |
| b. ♂ juv. sk. | Aola, July 15.                 | C. M. Woodford, Esq. [P.]                       |

2. *Erythrophoyx prætermissa*. (Plate V.)

*Ardeirallus prætermissus*, *Sharpe, B. O. Club*, iii. no. xi. p. iv (1893).  
*Erythrophoyx prætermissa*, *Sharpe, Bull. B. O. Club*, iii. no. xvii.  
 p. xxxviii (1894); *id. op. cit.* v. no. xxxi. p. xiii (1895).

*Adult* (type of species). Similar to *E. woodfordi*, but darker and more brown, with the hind-neck brown instead of chestnut, the abdomen more ashy, and the under tail-coverts ashy grey instead of sandy buff. Total length 19 inches, culmen 3·3, wing 8·2, tail 2·7, tarsus 2·6, middle toe and claw 2·4.

*Young*. Darker and browner than the adults, all the feathers of the upper surface with straw-coloured edges; the under surface brown, instead of rufous, mottled with black and streaked with white on the throat and fore-neck; the abdomen dusky brown, mottled with sandy-buff margins to the feathers.

*Hab.* Molucca Islands: Ceram; Batchian.

|               |           |                                     |
|---------------|-----------|-------------------------------------|
| a. Ad. sk.    | N. Ceram. | Wallace Coll.<br>(Type of species.) |
| b. Juv. sk.   | Ceram.    | Wallace Coll.                       |
| c. ♂ juv. sk. | Batchian. | Wallace Coll.                       |

## 35. BOTAURUS.

*Botaurus*, *Briss. Orn.* v. p. 444 (1760) ..... Type.  
 B. *stellaris*.

*Range*. Temperate and Tropical regions of both north and south of both Hemispheres.

*Key to the Species.*

- a. Crown of head uniform, not barred.
  - a'. Primary-coverts and quills barred or mottled with rufous.
    - a''. Rufous bars on quills very distinct; size larger, wing over 13 inches ..... *stellaris*, p. 253.
    - b''. Quills not so distinctly barred with rufous, but rather mottled with the same; size smaller, wing under 13 inches .... *capensis*, p. 257.
  - b'. Primary-coverts uniform brown; quills almost entirely brown, faintly mottled with rufous on the inner web; frill covering the hind-neck uniform dusky brown ..... *pæciloptilus*, p. 258.
  - c'. Primary-coverts and quills uniform slaty grey or slaty black with rufous tips; head brown ..... *lentiginosus*, p. 259.
- b. Crown of head barred with black and sandy buff like the hind-neck and sides of neck; primary-coverts and quills blackish brown, with rufous tips ..... *pinnatus*, p. 262.

1. *Botaurus stellaris*.

The Bittern, *Albin, Nat. Hist. B.* i. p. 65, pl. 68 (1738); *Lath. Gen. Syn.* iii. pt. 1, p. 56 (1785).

- Le Butor, *Briss. Orn.* v. p. 444, pl. xxxvii. (1760); *D'Aubent. Pl. Enl.* viii. pl. 789; *Buff. Hist. Nat. Ois.* vii. p. 411, pl. xxi. (1780).
- Ardea stellaris*, *Linn. Syst. Nat.* i. p. 239 (1766); *Gm. Syst. Nat.* i. p. 635 (1788); *Pall. Zoogr. Rosso-Asiat.* ii. p. 124 (1811); *Temm. Man. d'Orn.* ii. p. 580 (1820); *Roux, Orn. Prov.* pl. 319 (1825); *Wagl. Syst. Av.*, *Ardea*, sp. 28, p. 185 (1827); *Werner, Atlas, Gralles*, pl. 1 (1827); *Naum. Vog. Deutschl.* ix. p. 159, pl. 226 (1834); *Crespon, Orn. Gard.* p. 387 (1840); *Nordm. in Dénid. Voy. Russ. Mérid.* iii. p. 263 (1840); *Webb & Berth. Orn. Canar.* p. 36 (1841); *Selys-Longch. Faun. Belge*, p. 133 (1842); *Schl. Rev. Crit.* p. xcvi (1844); *Kjærh. Danm. Fugle*, pl. xxxii. fig. 2 (1852); *Schl. Vog. Nederl.* pl. 159 (1854); *Linderm. Vog. Griechentl.* p. 152 (1860); *Schl. Dier. Nederl. Vogels*, pl. 19. fig. 10 (1861); *id. Mus. Pays-Bas, Ardeæ*, p. 47 (1863); *Borggr. Vogelf. Norddeutschl.* p. 123 (1869); *Druste, Vogeln. Borkum*, p. 255 (1869); *Sunder. Sv. Fogl.* pl. xlv. fig. 6 (1856-72); *Heugl. Orn. N.O.-Afr.* ii. Abth. i. p. 1084 (1873: Kordofan; Adowa, Abyssinia); *Fallon, Ois. Belg.* p. 161 (1875); *Finsch, Verh. z.-b. Ges. Wien*, xxix. p. 248 (1879).
- Botaurus stellaris*, *Steph. in Shaw's Gen. Zool.* xi. p. 593 (1819); *Brehm, Vog. Deutschl.* p. 595 (1831); *Gould, B. Eur.* iv. pl. 280 (1837); *Bp. Comp. List B. Eur. & N. Amer.* p. 48 (1838); *Keys. & Blas. Wirb. Eur.* pp. lxxx, 220 (1840); *Gray, List Gralles Brit. Mus.* p. 80 (1844); *Muhle, Beitr. Orn. Griechentl.* p. 118 (1844); *Hewitt. Eggs Brit. B.* ii. p. 278, pl. lxxvi. fig. 2 (1846); *Gray, Cat. Mamm. etc. Nepal pres. Hodgs.* p. 135 (1846); *id. Gen. B.* iii. p. 557 (1847); *Blyth, Cat. B. Mus. As. Soc.* p. 282 (1849: Calcutta); *Temm. & Schl. Faun. Jap.* p. 116 (1850); *Strickl. P. Z. S.* 1850, p. 221 (Kordofan); *Thomps. B. Irel.* ii. p. 160 (1850); *Macgill. Brit. B.* iv. pp. 405, 410 (1852); *Bp. Consp. Av.* ii. p. 135 (1855); *Crisp, P. Z. S.* 1856, p. 54, 1857, p. 12 (Suffolk); *Leith Adams, P. Z. S.* 1858, p. 508, 1859, p. 188 (Cashmere); *Jaub. et Barth-Lapomm. Rich. Orn.* p. 364 (1859); *Salvin, Ibis*, 1859, p. 359 (Zana); *Tristr. Ibis*, 1860, p. 77 (Ngoussa); *Powys, t. c.* p. 347 (Epirus); *Irby, Ibis*, 1861, p. 246 (Oudh); *Swinh. t. c.* p. 410 (Swatow); *id. P. Z. S.* 1863, p. 320 (Canton); *Gray, Cat. Brit. B.* p. 149 (1863); *Gould, B. Gt. Brit.* iv. pl. 27 (1864); *Tristr. P. Z. S.* 1864, p. 451 (Palestine); *Jerd. B. Ind.* iii. p. 757 (1864); *More, Ibis*, 1865, p. 433 (Tring, nesting); *Godman, Ibis*, 1866, pp. 101, 107 (St. Michael's, Azores); *Drake, Ibis*, 1867, p. 430 (Martine); *Degl. et Gerbe, Orn. Eur.* ii. p. 308 (1867); *Loche, Expl. Sci. Algér., Ois.* ii. p. 141 (1867); *Tristr. Ibis*, 1868, p. 324 (Marshes of Huleh); *Beavan, t. c.* p. 398 (Ganges); *Smith, t. c.* p. 453 (Portugal); *Doderl. Avif. Sicil.* p. 216 (1869); *Saunders, Ibis*, 1869, p. 181 (Spain); *Godman, Azores*, p. 34 (1870); *Elwes & Buckley, Ibis*, 1870, p. 334 (Constantinople; Danube); *Fritsch, Vog. Eur.* tab. 37. fig. 6 (1870); *Salvad. Faun. Ital., Ucc.* p. 244 (1871); *Saunders, Ibis*, 1871, p. 392 (Southern Spain); *R. Gray, B. West Scottl.* p. 279 (1871: Arran; Islay; Mull); *Swinh. P. Z. S.* 1871, p. 413 (throughout China); *Gray, Hand-l. B.* iii. p. 32, no. 10161 (1871); *Harting, Handb. Brit. B.* p. 56 (1872); *Reinhardt, Vid. Medd.* 1872, pp. 132-134 (Greenland); *Shelley, B. Egypt*, p. 271 (1872); *Hume, Nests & Eggs Ind. B.* p. 624 (1873); *id. Str. F.* i. pp. 119, 256 (1873: Sind); *Severtz. Turkest. Jervotn.* p. 68 (1873: breeding); *Brooke, Ibis*, 1873, p. 341 (Sardinia); *Dyb. J. f. O.* 1873, p. 106 (E. Siberia); *Garrod, P. Z. S.* 1873, pp. 467, 637 (anatomy); *Sarby, B. Shell.* p. 188 (1874: Unst, March); *Ball, Str. F.* ii. p. 435 (1874: Chota

- Nagpur); Dresser, *B. Eur.* vi. p. 281, pl. 403 (1875); Garrod, *P. Z. S.* 1875, pp. 343, 348; Stoliczka, *Str. F.* iii. p. 220 (1875: Kashgar); Lulford, *Ibis*, 1875, p. 15 (Taormina); Swinh. *t. c.* p. 132 (Cheloo); Danford & Harvie-Brown, *t. c.* p. 425 (Transylvania); Swinhoe, *t. c.* p. 455 (Hakodadi); Irby, *Orn. Str. Gibr.* p. 188 (1875); Bygrave Wharton, *Ibis*, 1876, p. 27 (Corsica); Dresser, *t. c.* p. 325; Blanford, *East Persia*, ii. p. 297 (1876: Shiraz; Tehran); Butler & Hume, *Str. F.* iv. p. 28 (1876: Northern Guzerat); Scully, *t. c.* p. 196 (Eastern Turkestan); *Tacz. Bull. Soc. Zool. France*, i. p. 259 (1876); *id. op. cit.* ii. p. 155 (1877: Poland); David & Oust, *Ois. Chine*, p. 446 (1877); Butler, *Str. F.* v. p. 233 (1877: Deesa, Sept to March); Hume, *Str. F.* vii. p. 490 (1878: Calcutta); Invernizzi, *t. c.* p. 526 (Bombay, Oct.); Blakist. & Pryer, *Ibis*, 1878, p. 223 (Tokio; Yezo); *Prjev. in Roudley's Orn. Misc.* iii. p. 50 (1878: Hoangho Valley; Lake Hanka); Hume, *Str. F.* viii. p. 114 (1879); Butler, *Cat. B. Sind*, etc p. 70 (1879); Seebohm, *Ibis*, 1879, p. 149 (Yen-o-sei, lat. 64°); *id. P. Z. S.* 1879, p. 764 (Attreck River Valley); *Bogd. B. Cauc.* p. 167 (1879); Butler, *Cat. B. S. Bomb. Pres.* p. 84 (1880); *id. Str. F.* ix. p. 431 (1881: Deccan); Reid, *Str. F.* x. p. 76 (1881: Lucknow); Oates, *t. c.* p. 244 (1882: Pegu, Dec); Blakist. & Pryer, *B. Japan*, p. 118 (1882: Tokio; Yokohama; Yezo; Nagasaki); Swinhoe, *Ibis*, 1882, p. 123 (Candahar); Seebohm, *t. c.* p. 225 (Astrakhan, breeding); *B. O. U. List Brit B.* p. 111 (1883); Seebohm, *Ibis*, 1883, p. 32 (Caucasus); Irby, *t. c.* p. 188 (Sautauder); Saunders, ed. *Farrell's Brit. B.* iv. p. 206 (1884); Seebohm, *Hist. Brit B.* ii. p. 503, pl. 39 (1884); Blakist. *Amended List B. Japan*, p. 12 (1884); *Fauna Faun. y Flor. Palestine*, p. 111 (1884); Seebohm, *Ibis*, 1884, p. 268 (Kiukiang); Marshall, *t. c.* p. 425 (Chamba); *Bogdanoff, Consp. Av. Imp. Ross* p. 116 (1884: Crimea); Radde, *Orn. Cauc.* pp. 42, 405 (1884: Lenkoran; Tills to 6300 feet); Murray, *Vertebr. Faun. Sind.* p. 275 (1884); Whitehead, *Ibis*, 1885, p. 44 (Corsica); Reid, *t. c.* p. 250 (Marocco); *Gigl. Avif. Ital.* pp. 284, 541 (1886); *Salvad. Elenco Ucc. Ital.* p. 245 (1887); Tait, *Ibis*, 1887, p. 373 (Portugal); Lillford, *Col. Fig. Brit B.* part vii (1888); St. John, *Ibis*, 1889, p. 176 (Candahar); Reichen, *Syst. Verz. Vög. Deutschl.* p. 41 (1889); Saunders, *Man. Brit B.* p. 371 (1889); Sharpe, *Trans. Linn. Soc.* (2) Zool. v. p. 90 (1889: Bala Murghab); *Gigl. 1st Resoc. Avif. Ital.* p. 442 (1889); *2nd Resoc.* p. 646 (1890); *3rd Resoc.* p. 608 (1891); Seebohm, *B. Jap. Emp.* p. 226 (1890: all the Islands); Reichen & Heine, *Nomencl. Mus. Hein.* p. 300 (1890); Sharpe, *Sci. Res. 2nd Fark. Miss. Ares.* p. 126 (1891: Kashgar); Evans, *Ibis*, 1891, p. 70; Styan, *t. c.* pp. 327, 493 (Lower Yangtse); Lydekker, *t. c.* p. 368 (fossil); Brunsia, *Motr. etc. (Orn. Croat.)* p. 74 (1891); Seebohm, *Ibis*, 1892, p. 22 (Heligoland); De La Touche, *t. c.* p. 400 (Foochow); Hartert, *t. c.* p. 512 (E. Prussia, breeding); Meade-Waldo, *Ibis*, 1893, p. 190 (Canary Is.); *Tacz. Mém. Acad. Imp. St. Pétersb.* (7) xxxix p. 391 (1893); Reiser, *Ornis Balcanica*, p. 153 (1894).
- Nyctea stellaria*, Ehrenb. *Symb. Phys.* fol. m. (1828).
- Botaurus lacustris*, Brehm, *Vog. Deutschl.* p. 596 (1831).
- Botaurus arundinaceus*, Brehm, *t. c.* p. 596.
- Botaurus stellaria*, Vieuss. *Classif. B.* ii. p. 354 (1837).
- B. taurus taurus*, Hodgk. *Icon. ined. in Brit. Mus., Grallae*, pl. 67, n. 848, (nom. nudum).
- The Common Bittern, *Tarr. Brit. B.* ii. p. 475 (1843).
- Nyctea (Botaurus) stellaria*, Schrenck, *Reis. Amurl.* p. 453 (1850); Radde, *Reis. Sibir., Vog.* p. 345 (1863).



*Adult male.* General colour above tawny yellow and black, the latter colour predominating and occupying the centre of the feathers, the sides of which are tawny buff, freckled and irregularly barred with black; lower back, rump and upper tail-coverts pale tawny buff, mottled with bars or cross-lines of dusky brown; marginal wing-coverts rufous, regularly barred across with black; median and greater coverts tawny buff, with irregular bars or arrow-shaped markings of blackish brown, much less pronounced on the greater coverts, all of which have a rufescent tinge near the base; bastard-wing, primary-coverts, and quills blackish, barred with rufous, the bars somewhat broken up on the inner webs of the quills, which are also paler; the inner secondaries like the scapulars, being tawny buff on their edges and mottled in a similar manner; tail-feathers tawny buff, irregularly mottled with black bars or cross markings, more pronounced on the middle of the feathers; crown of head uniform black, with a frill of erectile plumes on the nape, these being tipped with tawny buff, and the pale tips crossed with lines of black; eyebrow, sides of face, and sides of neck tawny buff, the eyebrow uniform except on the upper edge, where the feathers are barred with black; the ear-coverts scarcely marked at all, but the plumes of the sides of the neck narrowly barred with black, and elongated into a frill which covers the hind-neck, the latter being clothed in dense down of a tawny-buff colour; the feathers below the eye, and a streak along the cheeks and down the sides of the neck, black; malar line of feathers and throat creamy white, with a central line of reddish-buff feathers slightly mottled with black bases; the lower throat also creamy white, with four or five tolerably defined broad lines of tawny buff and black mottled feathers; the lower part of the ruff on the fore-neck with narrow wavy lines of black; the breast covered with down of a tawny-buff colour, and hidden by a large patch of loose plumes on each side of the chest, which are mostly black with tawny-buff margins; remainder of under surface creamy white, streaked with black centres to the feathers, the black markings slightly broken up with mottlings of tawny buff; thighs and under tail-coverts with scarcely any markings whatever; under wing-coverts and axillaries tawny buff, the former narrowly lined with blackish, the axillaries more distinctly barred with dusky blackish: "bill greenish yellow; legs and feet yellowish green; claws dark brown; iris yellow; bare space before the eye yellowish green" (*H. Seebohm*). Total length about 24 inches, culmen 2.75, wing 13, tail 4.4, tarsus 3.8.

Two out of the three specimens collected by Mr. Robert Bergman at Yokohama are apparently young birds and have the primary-coverts and quills almost uniform, with a certain amount of rufous mottlings confined to the inner webs; in this state of plumage *B. stellaris* has a great resemblance to *B. paciloptilus*, but is always to be distinguished from the last-named bird by the tawny-coloured frill on the sides of the neck, instead of the smoky-brown one peculiar to the Australian bird.

*Hab.* Temperate portion of the Palearctic Region, visiting Northern Africa, N.W. India, Burma, and China.

|                            |                                                         |                                 |
|----------------------------|---------------------------------------------------------|---------------------------------|
| <i>a.</i> ♂ ad. sk.        | Walney Wash, Cambridge-shire, Jan. 17.                  | Salvin-Godman Coll.             |
| <i>b.</i> Ad. sk.          | Devonshire.                                             | Montagu Coll.                   |
| <i>c.</i> ♂ imm. sk.       | Velenzee, Hungary, Sept. 22 ( <i>J. von Madarász</i> ). | Hungarian National Museum [P.]. |
| <i>d.</i> ♂ ad. sk.        | Ismid, Asia Minor, Dec. 6 ( <i>T. Robson</i> ).         | Tweeddale Coll.                 |
| <i>e, f.</i> ♂ ♀ ad. sk.   | Marshes of Babylonia ( <i>Commander Jones</i> ).        | India Museum.                   |
| <i>g.</i> ♂ ad. sk.        | Egypt, Feb. 19 ( <i>G. E. S.</i> ).                     | Shelley Coll.                   |
| <i>h.</i> Ad. sk.          | River Nile.                                             | Hon. C. Barclay [P.].           |
| <i>i.</i> ♂ imm. sk.       | Bala Murgab, Northern Afghanistan, Dec. 29.             | Dr. Aitchison [C.].             |
| <i>k.</i> ♂ ad. sk.        | Karaol Khana, Feb. 25.                                  | Dr. Aitchison [C.].             |
| <i>l.</i> Ad. sk.          | Candahar, March 18.                                     | Colonel Swinhoe [P.].           |
| <i>m.</i> Ad. sk.          | Seebe, Kelat, Baluchistan, Nov. ( <i>O. T. Duke</i> ).  | Hume Coll.                      |
| <i>n, o, p.</i> Ad. sk.    | Peshawur ( <i>Griffith</i> ).                           | India Museum.                   |
| <i>q.</i> Juv. sk.         | Murdan, March 3 ( <i>W. H. Vincin</i> ).                | Hume Coll.                      |
| <i>r.</i> ♂ ad. sk.        | Sindh, Dec.                                             | Hume Coll.                      |
| <i>s, t.</i> ♀ ad. sk.     | Larkhana, Sindh, Jan. 9 ( <i>A. O. H.</i> ).            | Hume Coll.                      |
| <i>u.</i> Ad. sk.          | Roree, Sindh, Nov. 2 ( <i>A. O. H.</i> ).               | Hume Coll.                      |
| <i>v.</i> Ad. sk.          | Munchar Lake, Cashmere, Feb. 9.                         | Hume Coll.                      |
| <i>w.</i> Ad. sk.          | Ahmedabad, Dec. 27 ( <i>E. A. Butler</i> ).             | Hume Coll.                      |
| <i>x, y, z.</i> Ad. sk.    | Etawah, March.                                          | Hume Coll.                      |
| <i>a', b'.</i> Ad. sk.     | Oudh, Jan.                                              | Hume Coll.                      |
| <i>c'.</i> Ad. sk.         | Nepal.                                                  | Hodgson Coll.                   |
| <i>d'.</i> ♂ ad. sk.       | Bangalore, Oct. 9 ( <i>R. G. W. R.</i> ).               | Tweeddale Coll.                 |
| <i>e'.</i> Ad. sk.         | Khasia Hills ( <i>Griffith</i> ).                       | India Museum.                   |
| <i>f'.</i> ♀ ad. sk.       | Pegu, Dec. 3 ( <i>E. W. O.</i> ).                       | Oates Coll.                     |
| <i>g', h', i'.</i> Ad. sk. | Yokohama, Japan, Jan. ( <i>R. Bergman</i> ).            | Tweeddale Coll.                 |
| <i>k'.</i> ♂ ad. sk.       | Nagasaki, Nov. 4.                                       | F. Ringer, Esq. [P.].           |
| <i>l'.</i> ♂ ad. sk.       | Shanghai, winter.                                       | F. W. Styan, Esq. [P.].         |
| <i>m'.</i> Ad. sk.         | Kiukiang, Feb.                                          | F. W. Styan, Esq. [P.].         |
| <i>n'.</i> Ad. sk.         | Macao, China ( <i>R. Swinhoe</i> ).                     | Salvin-Godman Coll.             |
| <i>o'.</i> ♂ ad. sk.       | Kintang, Feb. 23 ( <i>Skinner</i> ).                    | Tweeddale Coll.                 |
| <i>p'.</i> Ad. sk.         | China.                                                  | Mr. Fortune.                    |
| <i>q'.</i> Skeleton.       |                                                         | Purchased.                      |
| <i>r'.</i> Sternum.        | England.                                                | J. Ray, Esq. [P.].              |
| <i>s', t'.</i> Sterna.     | Europe.                                                 | Purchased.                      |

## 2. *Botaurus capensis*.

*Botaurus stellaris* (*nec L.*), *Bp. Consp.* ii. p. 135 (1855, pt.); *Layard, B. S. Afr.* p. 311 (1867: Cape Town; Verloren Vley; Zoetendals

Vley, breeding); *Gray, Hand-l. B.* iii. p. 32, no. 10161 (1871, pt.); *Barratt, Ibis*, 1876, p. 211 (Potchefstroom); *Reichen. J. f. O.* 1877, p. 248; *Ayres, Ibis*, 1880, p. 270 (Potchefstroom); *Butler, Feilden, & Reid, Zool.* 1882, p. 344 (Newcastle, breeding); *Symonds, Ibis*, 1887, p. 334 (Orange Free State).

*Ardea stellaris capensis*, *Schleg. Mus. Pays-Bas, Ardeæ*, p. 48 (1863: Levakoo).

*Botaurus capensis*, *Ayres, Ibis*, 1869, p. 300 (Potchefstroom).

*Adult male.* Similar to *B. stellaris*, but smaller and more coarsely marked above, and distinguished by the less barred appearance of the wings, the black cross bars being broken up into mottlings: "bill light greenish ash, dusky on the ridge; bare skin round the eye ashy fulvous; tarsi and feet pale green; soles of feet yellow; iris pale tawny brown, with an outer edging of dark reddish brown" (*T. Ayres*). Total length 25 inches, culmen 2·7, wing 12·5, tail 4·5, tarsus 3·2.

*Adult female.* Similar to the male. Total length 20 inches, culmen 2·3, wing 11, tail 3·9, tarsus 3·1.

*Hab.* South Africa.

|                               |                                                                 |                             |
|-------------------------------|-----------------------------------------------------------------|-----------------------------|
| a. Ad. sk.                    | South Africa.                                                   | Old Coll.                   |
| b. Ad. sk.                    | South Africa.                                                   | Shelley Coll.               |
| c. Ad. sk.                    | Cape Colony.                                                    | Sir A. Smith [C.]           |
| d. ♀ ad. sk.                  | Natal ( <i>T. Ayres</i> ).                                      | Tweeddale Coll.             |
| e. ♂ ad. sk.                  | Kroonstadt, Orange Free State,<br>Dec. 8 ( <i>E. Symonds</i> ). | Gurney Coll.                |
| f. Ad. sk.                    | Transvaal.                                                      | F. A. Barratt, Esq.<br>[P.] |
| g, h. ♂ ad. ;<br>i. ♀ ad. sk. | Potchefstroom, May, Aug., Oct.<br>( <i>T. Ayres</i> ).          | Gurney Coll.                |

### 3. *Botaurus poeciloptilus*.

*Ardea poeciloptila*, *Wagler, Syst. Av.*, *Ardea*, sp. 28, note (1827)  
*Finsch, J. f. O.* 1870, p. 348.

*Botaurus melanotus*, *Gray, in Dieffenb. Trav.*, App. p. 196 (1843);  
*id. List Grallæ Brit. Mus.* p. 81 (1844).

*Botaurus poeciloptilus*, *Gray, Gen. B.* iii. p. 557 (1847); *id. Ibis*,  
1862, p. 236; *Gould, Handb. B. Austr.* ii. p. 313 (1865).

*Botaurus australis*, *Gould, B. Austr.* vi. pl. 64 (1848).

*Botaurus poeciloptilus*, *Bp. Consp.* ii. p. 135 (1855); *id. C. R.* xl.  
p. 723 (1855); *Buller, B. New Zealand*, p. 238 (1873); *Finsch, Ibis*,  
1882, p. 399 (New Zealand); *Layard, t. c.* pp. 531, 544 (Ansevatā);  
*Buller, B. New Zeal* (2nd ed.) ii. p. 142, pl. xxxvii. (1888); *Heine & Reichen. Nomencl. Mus. Hein.* p. 309 (1890: S.W. Australia); *H. O. Forbes, Ibis*, 1893, p. 533 (Chatham Isl.).

*Ardea poiceloptera*, *Hutton, Cat. B. N. Zeal* p. 28 (1871).

*Botaurus poecilopterus*, *Walker, Ibis*, 1892, p. 260 (Adèle Isl., N.W. — Australia).

*Adult.* Of about the same size and general character as *B. stellaris* but easily distinguished from that species by its more sombre coloration, nearly uniform black mantle and scapulars, and by the smoky-brown ruff on the sides of the neck, which is uniform like the head, and is united to a brown band which runs from below the eye and joins the ruff on its upper parts; sides of face and ear —

coverts ochreous, as also the under surface, which has the usual reddish bands on the fore-neck and the black-centred feathers on the sides of the chest; the primary-coverts and quills are uniform blackish, only slightly mottled with rufous: "bill yellowish olive in some, greenish horn-colour in others; space round the eye and feet beautiful pale green; iris yellow in some, lilac-red in others" (*J. Gould*). Total length 24 inches, culmen 2·8, wing 12·5, tail 4·5, tarsus 3·9.

*Young.* Distinguished from the adults by its more uniform yellow tint and by the quills being mottled and barred with rufous more in the manner of *B. stellaris*; crown of head and ruff pale smoky brown, the under surface ochreous buff and the streaks very rufous, especially the one down the centre of the throat.

*Hab.* Australia and New Zealand; New Caledonia.

|               |                                                                       |                                 |
|---------------|-----------------------------------------------------------------------|---------------------------------|
| a. Ad. sk.    | Australia.                                                            | Purchased.                      |
| b. Juv. sk.   | New South Wales.                                                      | Imperial Institute [P.].        |
| c, d. Ad. sk. | Queensland.                                                           | Salvin-Godman Coll.             |
| e. Ad. sk.    | Murray River, S. Australia.                                           | C. D. E. Fortnum,<br>Esq. [P.]. |
| f. Ad. sk.    | Tasmania.                                                             | Hume Coll.                      |
| g. ♀ ad. sk.  | Tasmania ( <i>Dr. McCormick</i> ).                                    | Antarctic Exped.                |
| h. Juv. sk.   | New Zealand.                                                          | McCormick Bequest.              |
| i. Juv. sk.   | New Zealand.                                                          | Sir G. Grey [P.].               |
| k. Ad. sk.    | New Zealand.                                                          | Sir E. Home [P.].               |
| l. ♂ ad. sk.  | New Zealand.                                                          | Antarctic Expedition.           |
| m. Ad. sk.    | New Zealand.                                                          | Miss R. Stone [P.].             |
| n. Ad. sk.    | New Zealand.                                                          | Capt. Stokes [P.].              |
| o. Imm. sk.   | Bay of Islands, New Zealand.                                          | Antarctic Exped.                |
| p. ♀ imm. sk. | Otago, New Zealand.                                                   | Hume Coll.                      |
| q. Ad. sk.    | Dunedin, New Zealand, July.                                           | Hume Coll.                      |
| r. Imm. sk.   | Wellington, New Zealand.                                              | Voy. H.M.S. 'Chal-<br>lenger.'  |
| s. ♂ imm. sk. | Anseвата, Noumea, New Cale-<br>donia, Dec. 2 ( <i>E. L. Layard</i> ). | Seebohm Coll.                   |

#### 4. *Botaurus lentiginosus*.

The Bittern from Hudson's Bay, *Edwards, Nat. Hist. B.* iii. p. 136, pl. 136 (1748).

Le Butor de la Baye de Hudson, *Briss. Orn.* v. p. 449 (1760).

*Ardea stellaris*, var., *Forst. Phil. Trans.* lxii. p. 410 (1772).

Le Butor de la baie d'Hudson, *Buff. Hist. Nat. Ois.* vii. p. 430 (1780).

Bittern, var. A, *Lath. Gen. Syn.* iii. pt. 1, p. 58 (1785).

*Ardea stellaris*, var. β, *Gm. Syst. Nat.* i. p. 636 (1788).

*Ardea lentiginosa*, *Montagu, Orn. Dict. Suppl.* (1813); *Sicains. & Richards. Faun. Bor.-Amer., Birds*, p. 374 (1831); *Temm. Man. d'Orn.* iv. p. 381 (1840); *Keys. & Blas. Wirb. Eur.* pp. lxxx, 220 (1840).

*Ardea minor*, *Wilson, Amer. Orn.* viii. p. 35, pl. lxx. fig. 3 (1814); *Audub. B. Amer.* pl. 337 (c. 1826); *id. Orn. Biogr.* iv. p. 296 (1838); *id. B. Amer.* 8vo, vi. p. 94, pl. 365 (1843); *Dutton, Zool.* 1868, p. 1098 (East Sussex).

*Ardea mokoho*, *Vieill. N. Dict. d'Hist. Nat.* xiv. p. 440 (1817); *Wagl. Syst. Av., Ardea*, p. 185, sp. 29 (1827).

*Botaurus lentiginosus*, *Stephens, in Shaw's Gen. Zool.* xi. pt. 2, p. 596,

- pl. 46 (1819); *Gould, B. Eur.* iv. pl. 281 (1837); *Bp. Comp. List B. Eur. & N. Amer.* p. 48 (1838); *Macgill. Man. Brit. B.* ii. p. 124 (1842); *Gray, Gen. B.* iii. p. 557 (1847); *Thomps. B. Irel.* ii. p. 168 (1850); *Farrell, Brit. B.* 3rd. ed. ii. p. 577 (1858; Dorsetshire); *Baird, B. N. Amer.* p. 674 (1858); *Salic Ibis*, 1860, p. 194 (Guatemala); *Coues, Proc. Philad. Acad.* 1861, p. 227 (Labrador); *Blakist. Ibis*, 1863, p. 129 (Saskatchewan; Nelson R.; Hudson Bay); *Gray, Cat. Brit. B.* p. 149 (1863); *Gurney, Zool.* 1866, p. 145 (Canterbury); *Coues, Proc. Philad. Acad.* 1866, p. 95 (Fort Whipple); *Dresser, Ibis*, 1866, p. 32 (S. Texas); *Salic. t. c.* p. 196 (Duenas); *Coues, t. c.* p. 263 (Arizona); *Baird, Ibis*, 1867, p. 285; *Brown, Ibis*, 1868, p. 424 (Vancouver Isl.); *Clermont, Zool.* 1869, p. 1517 (R. Fane, Irel.); *Blake Knox, Zool.* 1870, p. 2408 (Cahir, Irel.); *Coues, Proc. Philad. Acad.* 1871, p. 34 (Carolina); *R. Gray, B. West Scotl.* p. 280 (1871; Dumfriesshire; Aberdeenshire; Caithness); *Harting, Handb.* p. 150 (1872); *Gould, B. Gt. Brit.* iv. pl. 28 (1872); *Sci. & Salt. Nomencl. Av. Neotrop.* p. 125 (1873); *Dresser, B. Eur.* vi. p. 289, pl. 404 (1878); *Merrill, Pr. U.S. Nat. Mus.* i. p. 165 (1878; Fort Brown, Texas); *Belding, t. c.* p. 392 (Murphy's), p. 442 (Stockton); *Ridgw. op. cit.* v. p. 533 (1882; Cape San Lucas); *Stearns, op. cit.* vi. p. 120 (1883; Labrador); *Belding, t. c.* p. 351 (Lower California); *B. O. U. List Brit. B.* p. 111 (1883); *Saunders ed. Farrell's Brit. B.* iv. p. 213 (1884); *Seebahn, Hist. Brit. B.* ii. p. 506 (1884); *Baird, Brewer, & Ridgw. Water-Birds N. Amer.* i. p. 67 (1884); *Turner, Pr. U.S. Nat. Mus.* viii. p. 245 (1885; Rigolet; Moose Factory; Anticosti); *Drew, Auk*, ii. p. 18 (1885; Colorado up to 7000 feet, breeding); *Agersh. t. c.* p. 287 (S.E. Dakota, breeding); *Everm. Auk*, iii. p. 91 (1886; Ventura Co., Cal.); *Seton, t. c.* p. 150 (Manitoba, May to Oct.); *Scott, t. c.* p. 385 (San Pedro R., Arizona); *A. O. U. Check-l. N. Amer. B.* p. 134 (1886); *Salic, Ibis*, 1886, p. 170 (British Guiana); *Ferrari-Perez, Pr. U.S. Nat. Mus.* ix. p. 170 (1886; W. Mexico); *Townsend, op. cit.* x. pp. 196, 234 (1887; Upper Pitt R.; Fort Crook; Humboldt Bay); *Beckham, t. c.* pp. 636, 648; *Ridgw. Man. N. Amer. B.* p. 126 (1887); *Lloyd, Auk*, iv. p. 185 (1887; W. Texas); *Cory, Auk*, v. p. 49 (1888; W. Indies); *Merrill, t. c.* p. 143 (Fort Klamath); *Chapm. t. c.* p. 269 (Gainsville, Florida); *Kumlien, t. c.* p. 328 (Wisconsin); *Everm. t. c.* p. 347 (Indiana); *Torrey, Auk*, vi. pp. 1-8 (1889); *Scott, t. c.* p. 16 (Gulf Coast, Florida); *Bishop, t. c.* p. 140 (Magdalen Is., breeding); *Pinder, t. c.* p. 312 (Kentucky); *Cory, B. West Indies*, p. 250 (1889); *Saunders, Man. Brit. B.* p. 373 (1889); *Heine & Reichen. Nomencl. Mus. Hein.* p. 309 (1890; California); *Thomps. Pr. U.S. Nat. Mus.* xiii. p. 488 (1890; Manitoba); *Mearns, Auk*, vii. p. 51 (1890; Mormon Lake, Arizona); *Eagle Clarke, t. c.* p. 320 (Fort Churchill, Hudson's Bay); *F. H. Allen, Auk*, viii. p. 166 (1891; Bras d'Or Region); *Scott, Auk*, ix. p. 9 (1892; Jamaica); *Later. t. c.* p. 42 (Gray's Harbour); *Scott, t. c.* p. 211 (Caloosahatchie Region); *Attwater, t. c.* p. 232 (San Antonio, Texas); *Dwight, Auk*, x. p. 8 (1893; Prince Edward Isl.); *Shufeldt, t. c.* pp. 77, 78; *White, t. c.* p. 223 (Mackinac Isl.); *Wayne, t. c.* p. 337 (Suwanee R.).
- Ardea hudsonius*, *Merr. in Ersch & Grub. Encycl.* v. p. 175 (1820).—  
*Botaurus minor*, *Boie, Isis*, 1826, p. 979; *Gray, Hand-l. B.* iii. p. 8 no 10163 (1871); *Coues, Key N. Amer. B.* p. 270 (1872); *id. N.-West*, p. 523 (1874); *Hensh. Rep. 100th Merid.* p. 466 (1877; Utah); *Reid, Zool.* 1877, p. 480 (Bermuda Is.); *Mayn. B. Ea. N. Amer.* p. 419 (1879).

American Bittern, *Nutt. Man. Orn.* ii. p. 60 (1834); *Yarr. Brit. B.* ii. p. 481 (1843).

*Butor americana*, *Swains. Classif. B.* ii. p. 354 (1837).

*Butor lentiginosus*, *Jard. Brit. B.* iii. p. 147 (1842).

*Botaurus mugitans*, *Cab. in Schomb. Reis. Guian.* iii. p. 754 (1848); *Cones, Proc. Philad. Acad.* 1875, p. 353; *id. Check-l. N. Am. B.* p. 107 (1882); *id. Key N. Amer. B.* 2nd ed. p. 664 (1884).

*Botaurus adspersus*, *Licht. Nomencl. Av. Mus. Berol.* p. 89 (1854).

*Botaurus stellaris*, var. *minor*, *Bp. Consp. Av.* ii. p. 136 (1855).

*Ardea freti hudsonis*, *Schl. Mus. Pays-Bas, Ardeæ*, p. 49 (1863); *Degl. et Gerbe, Orn. Eur.* ii. p. 309 (1869).

**Adult male.** General colour above brown, blackish on the mantle and upper back, barred and freckled with ochreous or rufous-buff; the wing-coverts like the back, somewhat shaded with ashy, the greater series paler buff with coarser frecklings; bastard-wing, primary-coverts, and quills slaty blackish with rufous tips, the inner secondaries mottled like the back; lower back, rump, and upper tail-coverts ashy brown, with ochreous and dusky cross-markings, the upper tail-coverts more mottled with dusky; tail-feathers slaty grey, slightly mottled with rufous; crown of head dark brown or blackish, slightly rufescent; crest on the back of the nape ashy olive washed with yellow; ear-coverts dusky brown, surmounted by a narrow whitish eyebrow and washed with straw-yellow on the hinder parts, this colour extending down the sides of the neck and being bordered below by a very broad band of black, which starts from the base of the lower mandible and widens out on the sides of the neck, being followed by a lateral ruff of ashy feathers, streaked with pale ochre; cheeks and upper throat white, the latter with mesial narrow lines of dusky streaks; remainder of under surface of body ochreous buff, streaked with pale rufous, each streak being fringed with a line of black; on each side of the chest is an overhanging tuft of feathers, these feathers having broad black centres, slightly mottled with rufous and edged with ochreous; lower abdomen, thighs, and under tail-coverts uniform ochreous buff; under wing-coverts and axillaries also ochreous buff, mottled with dusky, the latter somewhat banded with rufous: "upper mandible olivaceous black, the tomium (broadly) lemon-yellow; lower mandible pale lemon-yellow, deeper basally, with a stripe of dusky brownish along the posterior part of the tomium; lores and eyelids lemon-yellow, the former divided longitudinally by a median stripe of dusky olive from the eye to the base of the upper mandible; legs and feet bright yellowish green; claws pale brown, dusky towards their points; iris clear, light, sulphur-yellow next the pupil, shading exteriorly into orange brownish, this encircled narrowly with black" (*Baird, Brewer, & Ridgway*). Total length 28 inches, culmen 3.1, wing 11.2, tail 3.6, tarsus 3.75.

**Adult female.** Similar to the male in colour, but without having the frills on the head and neck so much developed, while the black band on the sides of the neck is conspicuously smaller. Total length 21 inches, culmen 2.9, wing 10.2, tail 3.2, tarsus 3.4.

**Young.** Similar in general colour to the adult, but without the black band on the sides of the neck, the frills on the head and neck



very slightly indicated, and the rufous striping on the under surface freckled with blackish, and without the distinct black markings which characterize the adult.

Considerable variation in tint of colour is seen in a series of this Bittern, some specimens being grey whilst others are much more rufous.

*Hab.* North and Central America, occasionally occurring in Europe.

|                                          |                                                                  |                                     |
|------------------------------------------|------------------------------------------------------------------|-------------------------------------|
| a. Ad. st.                               | Dorsetshire.                                                     | Montagu Coll.<br>(Type of species.) |
| b. Ad. sk.                               | North America.                                                   | Lord Odo Russell<br>[P.]            |
| c. ♀ juv. sk.                            | Fort Dufferin, Manitoba<br>(G. Dawson).                          | N. A. Boundary Com-<br>mission [P.] |
| d. ♀ ad. sk.                             | Sirmass Prairie, British<br>Columbia.                            | J. K. Lord, Esq. [P.]               |
| e, f. ♂ ad. et ♀<br>juv. sk.             | West Side of Rocky Moun-<br>tains.                               | J. K. Lord, Esq. [P.]               |
| g. ♂ ad. sk.                             | Riverside, California, Feb.<br>28.                               | F. Crewdon, Esq.<br>[P.]            |
| h. ♂ ad. sk.                             | San José, California, Feb.<br>(J. Xantus).                       | Salvin-Godman Coll.                 |
| i. Ad. sk.                               | Lyons Falls, New York (A.<br>J. Dayan : Hensh. Coll.).           | Salvin-Godman Coll.                 |
| k. Ad. sk.                               | Ipswich, Mass., Sept. (H. W.<br>Henshaw).                        | Salvin-Godman Coll.                 |
| l, m. ♂ ad. ; n. ♀<br>ad. sk.            | New Haven, Conn., Oct. (A.<br>J. Dayan : Hensh. Coll.).          | Salvin-Godman Coll.                 |
| o. Ad. sk.                               | Chicago, Illinois (Hensh.<br>Coll.).                             | Salvin-Godman Coll.                 |
| p-f. Ad. et juv. sk.                     | Hernando Co., Florida, Oct.,<br>Nov. (W. R. Dean).               | Salvin-Godman Coll.                 |
| g', h'. ♂ ad. ; i', k', l'.<br>♀ ad. sk. | Corpus Christi, Texas, Oct.,<br>Dec, May (F. B. Arm-<br>strong). | Salvin-Godman Coll.                 |
| m'. Ad. sk.                              | Brownsville, Texas, July<br>(F. B. Armstrong).                   | Salvin-Godman Coll.                 |
| n'. ♂ ad. sk.                            | Chapulco, Puebla, Mexico,<br>Oct. 18 (F. Ferrari-Perez).         | Salvin-Godman Coll.                 |
| o'. Ad. sk.                              | Coban, Guatemala (O.<br>Salvin).                                 | Salvin-Godman Coll.                 |

### 5. *Botaurus pinnatus*.

*Ardea pinnata*, Licht. in *Mus. Berol.*; *Wagl. Isis*, 1829, p. 663;  
*Licht. Nomencl. Av. Mus. Berol.* p. 89 (1854); *Burm. Th. Bras.* iii.  
p. 408 (1856); *Schl. Mus. Pays-Bas, Ardees*, p. 49 (1863).

*Ardea brasiliensis* (nec Linn.), *Newwied, Naturg. Bras.* iv. p. 642  
(1832).

*Botaurus pinnatus*, Gray, *Gen. B.* iii. p. 557 (1847); *Cab. in Schomb.  
Reis. Guian.* iii. p. 754 (1848); *Bp. Consp. Av.* ii. p. 136 (1855);  
*Léot. Ois. Trinidad*, p. 429 (1866); *Lawr. Ann. Lyc. N. Y.* viii.  
p. 184 (1866: Nicaragua); *Sch. & Salv. Exotic Orn.* p. 181, pl. xci.  
(1869); *Gray, Hand-l. B.* iii. p. 32, no. 10166 (1871); *Pels. Orn.  
Bras.* pp. 302, 456 (1871: Rio Araguay); *Sch. & Salv. Nomencl.*








*Av. Neotr.* p. 125 (1873); *Reichen. J. f. O.* 1877, p. 349; *Baird, Brewer, & Ridgw. Water-B. N. Amer.* i. p. 67 (1884); *Salvin, Ibis*, 1886, p. 170; *Heine & Reichen. Nomencl. Mus. Hein.* p. 309 (1890: Guiana); *Chapm. Bull. Amer. Mus.* vi. p. 81 (1894: Trinidad).

*Ardea lentiginosa*, *Burm. Th. Bras.* iii. p. 408 (1856).

**Adult male.** General colour above black, only slightly varied with sandy buff, with which some of the feathers are spotted or notched on their outer web; the wing-coverts like the back, but more distinctly notched and barred with sandy buff or whitish, the greater wing-coverts especially being barred; bastard-wing, primary-coverts, and quills slaty blackish, all but the outer primaries more or less distinctly mottled and tipped with sandy buff at the ends, these tips being varied with blackish lines and mottlings, the inner secondaries notched with sandy buff on both webs; lower back and rump dull ashy brown, narrowly barred with sandy buff; upper tail-coverts blackish, with more distinct bars of sandy buff; tail-feathers black, a few freckled with buff on the margins; crown of head blackish, barred with sandy buff, much more distinctly on the hind-neck; sides of the face sandy buff with dusky bars, wider and more distinct on the neck-frill; chin and upper throat white; lower throat and fore-neck pale sandy buff, with longitudinal markings of tawny buff or yellowish brown, relieved by narrow black shaft-streaks and sub-terminal thread-like lines following the outline of the feather; remainder of under surface of body buffy white, the sides of the body streaked with tawny buff, mottled with black, and the lower flanks barred with black; on each side of the upper breast a patch of dark feathers, more or less marbled and barred with buff; under wing-coverts pale sandy buff, with dusky bars; the quill-lining grey: "bill brown above and on the edge of the lower mandible, otherwise brownish yellow; bare lores dirty yellow, with a dusky streak from eye to nostril; iris clear yellow" (*Neuwied*). Total length 30 inches, culmen 3.3, wing 12, tail 4.5, tarsus 4, middle toe and claw 4.4.

Specimens which I suppose to be younger individuals are much more tawny rufous than the one described above, and are never so black on the upper surface, the central streaks to the feathers of the throat and fore-neck being much brighter and light chestnut in tint.

**Hab.** From Brazil to Guiana. Said by Lawrence to have occurred in Nicaragua.

|                                                                                                           |                                                            |                              |
|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------|------------------------------|
|  <b>b. ♂ ad. sk.</b>   | Aunai, British Guiana, May 25, 1889 ( <i>H. Whitely</i> ). | Salvin-Godman Coll.          |
|  <b>Imm. sk.</b>       | Cayenne.                                                   | H. C. Rothery, Esq.<br>[P.]. |
|  <b>Ad. sk.</b>        | Pernambuco ( <i>Craven</i> ).                              | Salvin-Godman Coll.          |
|  <b>Ad. sk.</b>        | Rio de Janeiro.                                            | Purchased.                   |
|  <b>g. ♂ ♀ ad. sk.</b> | Rio de Janeiro.                                            | Alexander Fry, Esq.<br>[P.]. |

# APPENDIX

TO THE

PLATALEÆ (p. 1) AND HERODIONES (p. 56).

Owing to various causes the preparation of the present volume has been delayed, and consequently many additions to the foregoing pages have become necessary. It has therefore been considered more convenient to place the "Appendix" at the immediate end of the descriptions of the species of Herons, in order that the additions can be more easily studied.

Add:— Page 4. *Ibis æthiopica*.

*Ibis æthiopica*, *Shelley, Ibis*, 1897, p. 551 (Fort Johnston, N. Nyassa-land).

|             |                               |                           |
|-------------|-------------------------------|---------------------------|
| s. Imm. sk. | Transvaal ( <i>T. Ayres</i> ) | Hargitt Coll.             |
| ♂ ad. sk.   | Fort Johnston, Nyassa-land,   | Sir H. H. Johnston [P. 2. |
|             | July ( <i>A. Whyte</i> ).     |                           |

Page 7. Add:—*Ibis abbotti*.

*Ibis abbotti*, *Ridgw. Proc. U.S. Nat. Mus.* xvi. p. 599 (1898); *Shelley, B. Africa*, i. p. 155 (1896).

Similar to *I. bernieri*, as distinguished from *I. æthiopica*, but lower neck naked and minutely papillose; remiges without dark-coloured tips (blackish grey in *I. bernieri*, dark metallic green in *I. æthiopica*); decomposed tertials greenish blue on outer, greyish green on the inner webs; iris light blue instead of white (*Ridgway*).

*Hab.* Island of Aldabra.

Add:— Page 12. *Inocotia papillosa*.

|            |                   |                     |
|------------|-------------------|---------------------|
| ♂. Ad. sk. | Mymensing, Assam. | Godwin-Austen Coll. |
|------------|-------------------|---------------------|

Add :—

Page 15. *Nipponia nippon*.

|                                       |                                                    |               |
|---------------------------------------|----------------------------------------------------|---------------|
| <i>g.</i> ♀ ad. sk.                   | Corea, Feb. 1 ( <i>C. W. Campbell</i> ).           | Seebohm Coll. |
| <i>h.</i> ♀ imm. sk.                  | Hakodadi, Japan, April ( <i>Capt. Blakiston</i> ). | Seebohm Coll. |
| <i>i.</i> Ad. sk.                     | Yokohama ( <i>H. Pryer</i> ).                      | Seebohm Coll. |
| <i>k.</i> ♂ ad.; <i>l.</i> ♀ imm. sk. | Ningpo, Nov. 18 ( <i>R. Swinhoe</i> ).             | Seebohm Coll. |

Add :—

Page 16. *Comatibis comata*.

*Comatibis eremita* (*L.*), *Rothschild, Hartert, & Kleinschmidt, Novit. Zool.* iv. pp. 371–377, pls. viii., ix., x. (1897).

|                   |          |               |
|-------------------|----------|---------------|
| <i>g.</i> Ad. sk. | Mogador. | Seebohm Coll. |
|-------------------|----------|---------------|

In the paper above quoted the authors endeavour to prove that *Upupa eremita* of Linnæus, founded on Gesner's and Albin's descriptions and figures, is not, as has been generally supposed, a Chough, but is really the Bald Ibis, which they believe must have inhabited Europe at no distant period. They therefore propose to resuscitate the title of *eremita* for *Comatibis comata* of Ehrenberg. While admitting the ingenuity of their argument, I confess that I think it will be better to adhere to the name of *comata*, to which no doubt attaches, rather than to that of *eremita*, which is so composite that it will always be open to more or less criticism.

Add :—

Page 19. *Hagedashia hagedash*.

*Hagedashia hagedash*, *Shelley, Ibis*, 1897, p. 551 (N. Nyasa-land).

|                     |                                                     |                          |
|---------------------|-----------------------------------------------------|--------------------------|
| <i>o.</i> ♂ ad. sk. | Songur, N. Nyasa-land,<br>July ( <i>A. Whyte</i> ). | Sir H. H. Johnston [P.]. |
|---------------------|-----------------------------------------------------|--------------------------|

Add :—

Page 21. *Theristicus melanopis*.

|                   |                                  |                               |
|-------------------|----------------------------------|-------------------------------|
| <i>i.</i> Ad. sk. | Rio Pilcomayo, Dec. 21,<br>1890. | J. Graham Kerr, Esq.<br>[C.]. |
|-------------------|----------------------------------|-------------------------------|

Add :—

Page 23. *Theristicus caudatus*.

|                   |                 |                                                   |
|-------------------|-----------------|---------------------------------------------------|
| <i>n.</i> Ad. sk. | British Guiana. | J. J. Quelch and F. V.<br>McConnell, Esqrs. [P.]. |
|-------------------|-----------------|---------------------------------------------------|

Add :—

Page 24. *Molybdophanes cærulescens*.

|                   |                                   |                               |
|-------------------|-----------------------------------|-------------------------------|
| <i>p.</i> Ad. sk. | Rio Pilcomayo, April 10,<br>1890. | J. Graham Kerr, Esq.<br>[C.]. |
|-------------------|-----------------------------------|-------------------------------|

Add :—

Page 25. *Harpiprion cayennensis*.

|                   |                 |                                                   |
|-------------------|-----------------|---------------------------------------------------|
| <i>q.</i> Ad. sk. | British Guiana. | J. J. Quelch and F. V.<br>McConnell, Esqrs. [P.]. |
|-------------------|-----------------|---------------------------------------------------|

Add :— Page 27. *Lophotibis cristata*.

|            |             |            |
|------------|-------------|------------|
| g. Ad. st. | Madagascar  | Purchased. |
| h. Ad. sk. | Madagascar. | Purchased. |

Add :— Page 29. *Plegadis falcinellus*.

*Plegadis falcinellus*, Oates, *Handb. B. Br. Burm.* ii. p. 271 (1883).  
*Plegadis autumnalis*, Savage, *Auk*, xii. p. 393 (1895: New York);  
*A. O. U. Check-l.* 2nd ed. p. 68 (1895); *Ridgw. Man.* 2nd ed. p. 124  
 (1896).

|               |                             |                           |
|---------------|-----------------------------|---------------------------|
| y'. ♂ ad. st. | Near Seville, April 1889    | Hargitt Coll.             |
|               | (Ruiz).                     |                           |
| z". Ad. sk.   | Fao, Persian Gulf, April 1. | W. D. Cumming, Esq. [C.]. |
| z'. Ad. sk.   | Fao.                        | S. Butcher, Esq. [P.].    |
| bb'. Juv. sk. | Mymensing, Assam.           | Godwin-Austen Coll.       |

Add :— Page 34. *Plegadis guarauna*.

*Plegadis guarauna*, Holland, *Ibis*, 1893, p. 318 (Estancia Santa Elena, Argentine Rep.: breeding); Peabody, *Auk*, xiii. p. 79 (1896: Minnesota: breeding); *A. O. U. Check-l. N. Amer. B.* 2nd ed. p. 68 (1895); *Ridgw. Man. N. Amer. B.* 2nd ed. p. 124 (1896).

|              |                                               |                            |
|--------------|-----------------------------------------------|----------------------------|
| n'. Juv. sk. | Fortin Page, Rio Pilco- mayo, Sept. 10, 1890. | J. Graham Kerr, Esq. [C.]. |
|--------------|-----------------------------------------------|----------------------------|

Add :— Page 37. *Plegadis ridgwayi*.

*Plegadis ridgwayi*, *Ridgw. Man. N. Amer. B.* 2nd ed. p. 124 (1896).

Add :— Page 38. *Lampribus olivacea*.

*Plegadis olivaceus*, Shelley, *B. Africa*, i. p. 156 (1896).

For this species the name of *Lampribus rara* has been proposed by Messrs. Rothschild, Hartert, and Kleinschmidt (*Novit. Zool.* iv. p. 377), as they believe that the *Ibis olivacea* of Du Bus is only *Hagedashia hagedash*. I followed Mr. Elliot in his identification, but I now consider the above-named writers to be correct in their determination, and the species must stand as *Lampribus rara*.

Add :— Page 39. *Eudocimus albus*.

*Eudocimus albus*, Christy, *Ibis*, 1897, p. 337 (S. Domingo).  
*Guara alba*, Field, *Auk*, xi. p. 121 (1894: Port Henderson, Jamaica);  
*A. O. U. Check-l. N. Amer. B.* p. 57 (1895); *Ridgw. Man. N. Amer. B.* p. 123 (1896).

Add:— Page 41. *Eudocimus ruber*.

*Guara rubra*, *Field, Auk*, xi. p. 121 (1894 : Port Henderson, Jamaica);  
*Lowe, t. c.* p. 324 (Colorado); *A. O. U. Check-l. N. Amer. B.* 2nd  
 ed. p. 67 (1895); *Ridgw. Man. N. Amer. B.* 2nd ed. p. 123 (1896).

*f, g, h.* Ad. sk. British Guiana. J. J. Quelch and F. V.  
 McConnell, Esqrs. [P.]

Add:— Page 44. *Platalea leucorodia*.

*Platalea leucorodia*, *Sundev. Sv. Fogl.* pl. 77. fig. 2 (1867); *Jaub.*  
*C. R.* lxxv. p. 1780 (1872); *Marchand, Rev. Zool.* (3) v. p. 355,  
 pl. 15 (1877); *Meyer, Abbild. Vogelsk.* parts xiii., xv., pls. cxviii.,  
 cxxxv. (1889-90).

*r'.* ♂ ad. sk. Havre, N. France, April 5, 1876 Hargitt Coll.  
 (*V. Pluche*).  
*s'.* ♀ ad. sk. Havre, March 1875 (*V. Pluche*). Hargitt Coll.  
*t'.* Ad. sk. Mhow, C. India. Surgeon-Major C. R.  
 Bartlett.  
*u'.* Pull. sk. Europe. Hargitt Coll.

Add:— Page 60. *Phoyx purpurea*.

*Ardea purpurea*, *Sjöstedt, K. Svensk. Vet.-Akad. Handl.* xxvii. no. 1,  
 p. 33 (1895 : Cameroons); *Eagle Clarke, Ibis*, 1895, p. 197 (Rhône  
 Delta); *Shelley, Ibis*, 1896, p. 239 (Lake Shirwa, Nyasa-land),  
 1897, p. 551 (Karonga, N. Nyasa-land).

*m'.* Ad. sk. Near Seville (*Ruiz*). Hargitt Coll.  
*n'.* Ad. sk. Nyasa-land. Alfred Sharpe, Esq.  
 [P.]  
*o'.* ♂ imm. sk. Karonga, Nyasa-land, July Sir H. H. Johnston  
 (*A. Whyte*). [P.]

Add:— Page 63. *Phoyx manillensis*.

*Phoyx manillensis*, *Sharpe, Bull. B. O. C.* iii. p. xxxviii (1894);  
*Ogilvie-Grant, Ibis*, 1895, p. 266 (Albay, Luzon).  
*Ardea purpurea (nec L.)*, *Bourns & Worcester, Occ. Papers Minnes.*  
*Acad.* i. p. 31 (1894).

For specimens *c*<sup>3</sup> to *i*<sup>3</sup>, read *c*<sup>2</sup>—*i*<sup>2</sup>.

*k'', l'.* ♂ ♀ ad. sk. Futtehghurh district, March Seebohm Coll.  
 1879 (*A. Anderson*).  
*m''.* Ad. sk. Salt Lake, Calcutta. Godwin-Austen Coll.  
*n''.* Juv. sk. Hankow, China (*R. Swinhoe*). Seebohm Coll.  
*o''.* ♂ ad. sk. Manitoë, Albay district, N.E. J. Whitehead, Esq.  
 Luzon, Aug. 19. [C.]  
*p''.* Ad. sk. Concepcion, Panay, Jan. 20. Prof. J. B. Steere  
 [C.]  
*q''.* ♂ ad. sk. Leyte, April 15. Prof. J. B. Steere  
 [C.]  
*r''.* ♂ ad. sk. Marinduque, May 12. Prof. J. B. Steere  
 [C.]

Add:— Page 66. *Ardea goliath*.

*Ardea goliath*, Legge, *Birds of Ceylon*, p. 1125 (1880); *Sjöstedt, K. Svensk. Vet.-Akad. Handl.* xxvii. no. 1, p. 33 (1895: Cameroons).

Add:— Page 68. *Ardea sumatrana*.

*Ardea fusca*, Blyth, *Ann. & Mag. Nat. Hist.* xiii. p. 176 (1844).

- |               |                                     |                            |
|---------------|-------------------------------------|----------------------------|
| l. ♂ imm. sk. | Guimaras, Dec. 28.                  | Prof. J. B. Steere<br>[C.] |
| u. ♀ juv. sk. | Likupang, N. Celebes, Nov.<br>1895. | C. Hose, Esq. [C.]         |

Add:— Page 70. *Ardea insignis*.

*Ardea insignis*, Hume, *Str. F.* vi. p. 470 (1878: descr. orig.).

Add:— Page 70. *Ardea melanocephala*.

*Ardea melanocephala*, Shelley, *Ibis*, 1897, p. 551 (Karonga, N. Nyasa-land).

- |              |                                          |                            |
|--------------|------------------------------------------|----------------------------|
| p. ♀ ad. sk. | Karonga, Nyasa-land, July<br>(A. Whyte). | Sir H. H. Johnston<br>[P.] |
|--------------|------------------------------------------|----------------------------|

Add:— Page 72. *Ardea cocoi*.

*Ardea cocoi*, Durnf. *Ibis*, 1878, p. 380 (Chupat Valley, Patagonia);  
*Graham Kerr, Ibis*, 1892, p. 144; *Lane, Ibis*, 1897, p. 88 (Chili).

- |              |                                                       |                                                  |
|--------------|-------------------------------------------------------|--------------------------------------------------|
| l. Ad. sk.   | British Guiana.                                       | J. J. Quelch and F. V.<br>McConuell, Esqrs. [P.] |
| m. ♂ ad. sk. | R. Rupurumi, British Guiana,<br>Feb. 25 (H. Whitely). | Salvin-Godman Coll.                              |
| n. ♀ ad. sk. | Espartilla, Argentine Republic,<br>July 20, 1888.     | A. H. Holland, Esq. [C.]                         |

Add:— Page 74. *Ardea cinerea*.

*Ardea cinerea*, *Sjöstedt, K. Svensk. Vet.-Akad. Handl.* xxvii. no. 1,  
p. 23 (1895: Cameroons); *A. O. U. Check-l. N. Amer. B.* 2nd ed.  
p. 71 (1895); *Whitaker, Ibis*, 1895, p. 104 (Tunis); *Eagle Clarke,*  
*t. c.* p. 197 (Rhône Delta); *H. J. & C. E. Pearson, t. c.* p. 247  
(Iceland); *Ferbury, Ibis*, 1896, p. 37 (Aden: cold weather);  
*Shelley, t. c.* p. 239 (Lake Shirwa, Nyasa-land); *Ridgw. Man. N.*  
*Amer. B.* 2nd ed. p. 129 (1896); *Sharpe, Handb. Briz. B.* iii.  
p. 69, pl. lxvi. (1896).

- |                              |                                              |                            |
|------------------------------|----------------------------------------------|----------------------------|
| a <sup>2</sup> . Pull. sk.   | Norfolk (E. Bidwell).                        | Seebohm Coll.              |
| b <sup>2</sup> . ♂ ad. sk.   | Dunvegan, Skye, May (C.<br>Dixon).           | Seebohm Coll.              |
| c <sup>2</sup> . ♂ pull. sk. | Lakes near Rotterdam, July<br>(Leyden Mus.). | Seebohm Coll.              |
| d <sup>2</sup> . ♂ ad. sk.   | Havre, April 4, 1871 (V.<br>Pluche)          | Hargitt Coll.              |
| e <sup>2</sup> . Ad. sk.     | Nyasa-land.                                  | Alfred Sharpe, Esq.        |
| f <sup>2</sup> . Ad. sk.     | Lake Shirwa, Sept. 21 (A.<br>Sharpe).        | Sir H. H. Johnston<br>[P.] |

|              |                                               |                             |
|--------------|-----------------------------------------------|-----------------------------|
| ♂. ♂ ad. sk. | Muscat, Arabia, Feb. 16, 1896.                | Surg.-Col. Jayakar<br>[P.]. |
| ♂. Ad. sk.   | Yokohama, Japan ( <i>H. Pryer</i> ).          | Seebohm Coll.               |
| ♂. Juv. sk.  | Hwailai Hien, Sept. 20 ( <i>R. Swinhoe</i> ). | Seebohm Coll.               |
| ♂. Ad. sk.   | Mymensing, Assam.                             | Godwin-Austen Coll.         |

Add:— Page 80. *Ardea herodias*.

*Ardea herodias*, *Field, Auk*, xi. p. 121 (1894: Port Henderson, Jamaica); *Stone, t. c.* p. 135 (New Jersey: summer); *Richmond & Knowlton, t. c.* p. 302 (Montana); *A. O. U. Check-l. N. Amer. B.* 2nd ed. p. 71 (1895); *Ridgw. Man. N. Amer. B.* 2nd ed. pp. 129, 586 (1896).

*Ardea lessoni*, *Wagler, Isis*, 1831, p. 531; *Reichen, J. f. O.* 1877, p. 266.

Add:— Page 80, note. *Ardea wurdemanni*.

*Ardea wurdemanni*, *Ridgw. Man. N. Amer. B.* pp. 128, 585 (1896).

Add:— Page 80, note. *Ardea wardi*.

*Ardea wardi*, *A. O. U. Check-l. N. Amer. B.* 2nd ed. p. 71 (1895); *Ridgw. Man. N. Amer. B.* 2nd ed. pp. 129, 586 (1896).

Add:— Page 85. *Mesophoyx intermedia*.

*Herodias intermedia*, *Hume, Str. F.* i. p. 283 (1873), ii. p. 303 (1874), vi. p. 476 (1878), xi. p. 333 (1888); *Oates, Handb. B. Burm.* ii. p. 247 (1883); *Parker, Ibis*, 1883, p. 256 (Ceylon: Dec. to April); *Nicholson, t. c.* p. 256 (Lake Ranau, Sumatra); *Seebohm, Ibis*, 1884, p. 268 (Kiukiang); *Parker, Ibis*, 1883, p. 183 (Ceylon); *Bourne & Worcester, Occ. Papers Minnes. Acad.* i. p. 32 (1894: Mindoro); *Oates, in Hume's Nests & Eggs Ind. B.* iii. p. 240 (1890); *Jesse, Ibis*, 1897, p. 561 (Lucknow: breeding).

*Mesophoyx intermedia*, *Sharpe, Bull. Brit. Orn. Club*, iii. p. xxxviii (1894), v. p. xi (1896).

Add:—

|                  |                               |               |
|------------------|-------------------------------|---------------|
| ♂. Juv. sk.      | Yokohama ( <i>H. Pryer</i> ). | Seebohm Coll. |
| ♂. ♂ aestiv. sk. | Canton ( <i>S. Bligh</i> ).   | Seebohm Coll. |

Add:— Page 87. *Mesophoyx brachyrhyncha*.

*Herodias intermedia (nec Wagl.)*, *Symonds, Ibis*, 1887, p. 335 (Kroonstadt, Orange Free State); *Reichen. Vög. deutsch-Ost-Afr.* p. 67 (1894: Usambara); *Shelley, Ibis*, 1896, p. 239 (Mpimbi).

*Mesophoyx brachyrhyncha*, *Sharpe, Bull. Brit. Orn. Club*, v. p. xi (1896).

*Herodias brachyrhyncha*, *Shelley, B. Africa*, i. p. 157 (1896).

|            |                                                                |                             |
|------------|----------------------------------------------------------------|-----------------------------|
| d. Ad. sk. | Near Mpimbi, River Shiré,<br>July 1, 1894 ( <i>A. Whyte</i> ). | Sir H. H. Johnston<br>[P.]. |
|------------|----------------------------------------------------------------|-----------------------------|



Add:— Page 87. *Mesophoyx plumifera*.

*Mesophoyx plumifera*, *Sharpe, Bull. Brit. Orn. Club*, xi. p. xi (1896).

Page 90. *Herodias alba*.

Page 91, line 5 from bottom, *delete* Hume, *Str. F.* vii. p. 114 (1879); Scully, *t. c.* p. 360 (Nepal Valley).

## Add:—

*Herodias torra*, *Hume & Davison, Str. F.* vi. p. 472 (1878); *Ball, Str. F.* vii. p. 230 (1878); *Hume, Str. F.* viii. p. 114 (1879); *Scully, t. c.* p. 360; *Doig, t. c.* p. 372; *Vidal, Str. F.* ix. p. 88 (1880); *Sharpe, Handb. Brit. B.* iii. p. 74 (1896).

*Ardea alba*, *Sjöstedt, K. Svensk. Vet.-Akad. Handl.* xxvii. no. 1, p. 33 (1895: Cameroons); *Ferbury, Ibis*, 1896, p. 37 (Aden).

*Herodias alba*, *Reichen Vög. deutsch-Ost-Afr.* p. 67 (1894: Bagamoyo; Kingani, Kakoma; Bukoba).

|               |                                     |                            |
|---------------|-------------------------------------|----------------------------|
| y'. Pull. sk. | Lower Volga, July ( <i>Henke</i> ). | Seebohm Coll.              |
| z'. ♂ ad. sk. | Muscat, Feb. 21, 1890.              | Surg.-Col. Jayakar<br>[P.] |
| aa. Ad. sk.   | Gold Coast, W. Africa.              | Shelley Coll.              |

Add:— Page 95. *Herodias egretta*.

*Ardea egretta*, *Gm. Syst. Nat.* i. p. 629 (1788); *Field, Auk*, xi. p. 121 (1894: Port Henderson, Jamaica); *A. O. U. Check-L. N. Amer. B.* p. 71 (1895); *Ridgw. Man. N. Amer. B.* 2nd ed. p. 130 (1896); *Underwood, Ibis*, 1896, p. 450 (Costa Rica); *Eaton, Auk*, xiii. p. 178 (1896: Erie Co., New York); *Lane, Ibis*, 1897, p. 188 (Chili); *Christy, t. c.* p. 340 (S. Domingo).

|               |                                                   |                             |
|---------------|---------------------------------------------------|-----------------------------|
| k'. ♂ ad. sk. | Espartilla, Argentine Republic,<br>Aug. 2, 1890.  | A. H. Holland, Esq.<br>[C.] |
| l'. ♂ ad. sk. | Espartilla, Argentine Republic,<br>Nov. 22, 1889. | A. H. Holland, Esq.<br>[C.] |

Add:— Page 98. *Herodias timoriensis*.

*Herodias timoriensis*, *Sharpe, Bull. Brit. Orn. Club*, v. p. xi (1896).

It seems probable that, after all, this species will have to be united to *H. alba*, as Dr. Stejneger (*Proc. U.S. Nat. Mus.* x. p. 315, 1887) and Taczanowski (*Faune Orn. Ost-Sibir.* ii. p. 979) both give the bill as "black." In the Seebohm collection there is also a black-billed specimen from Canton.

## Add:—

|                   |                                                             |               |
|-------------------|-------------------------------------------------------------|---------------|
| g'. ♀ ad. sk.     | Okinawa, Kaueshi, March<br>11, 1892 ( <i>P. A. Holst</i> ). | Seebohm Coll. |
| h'. Ad. hiem. sk. | Hankow, China ( <i>R. Swinhoe</i> ).                        | Seebohm Coll. |
| i'. Ad. sk.       | Canton.                                                     | Seebohm Coll. |

**Add:— Page 100. *Florida cœrulea*.**

*Ardea cœrulea*, *Field, Auk*, xi. p. 121 (1894: Port Henderson, Jamaica); *A. O. U. Check-l. N. Amer. B.* 2nd ed. p. 73 (1895); *Ridgw. Man. N. Amer. B.* 2nd ed. p. 130 (1896); *Underwood, Ibis*, 1896, p. 450 (Costa Rica); *Christy, Ibis*, 1897, p. 338 (S. Domingo).

*p*<sup>s</sup>. ♂ ad. sk. Grenada, W. Indies, April 17, Salvin-Godman Coll. 1891 (*Mrs. Herbert Smith*).

**Add:— Page 104. *Melanophoyx ardesiaca*.**

*Melanophoyx ardesiaca*, *Sharpe, Bull. Brit. Orn. Club*, v. p. xi (1895).

*Ardea ardesiaca*, *Shelley, Ibis*, 1896, p. 239 (Lake Shirwa).

*f*. Ad. sk. Lake Shirwa, Sept. 21 (*A. Sir H. H. Johnston Whyte*). [P.]

**Add:— Page 105. *Melanophoyx vinaceigula*. (Plate I. A.)**

*Melanophoyx vinaceigula*, *Sharpe, Bull. Brit. Orn. Club*, v. pp. xi, xiii (1895).

*Ardea vinaceigula*, *Shelley, B. Africa*, i. p. 157 (1896).

**Add:— Page 106. *Dichromanassa rufa*.**

*Ardea rufescens*, *A. O. U. Check-l. N. Amer. B.* 2nd ed. p. 72 (1895); *Ridgway, Man. N. Amer. B.* 2nd ed. pp. 131, 586 (1896).

*Ardea pealei*, *Ridgw. t. c.* p. 131 (1896).

**Add:— Page 109. NOTOPHOYX.**

*Notophoyx*, *Sharpe, Bull. Brit. Orn. Club*, v. p. xiii (1895).

**Add:— Page 109. *Notophoyx novæ hollandiæ*.**

*Notophoyx novæ hollandiæ*, *Sharpe, t. c.* pp. xi, xiii (1895).

*α, v.* ♀ ad. sk. Moindou, New Caledonia, Oct., Seebohm Coll. Nov. (*E. L. Layard*).

**Add:— Page 111. *Notophoyx pacifica*.**

*Notophoyx pacifica*, *Sharpe, Bull. Brit. Orn. Club*, v. p. xi (1895).

**Add:— Page 112. *Notophoyx picata*.**

*Notophoyx picata*, *Sharpe, Bull. Brit. Orn. Club*, v. p. xi (1895).

Add :— Page 113. *Notophox aruensis*. (Plate I. n.)

*Notophox aruensis*, Sharpe, *Bull. Brit. Orn. Club*, v. p. xi (1895).

Page 114, line 12. Add :—

*Range*. Coasts of Africa and of the Western Indian Ocean to Ceylon.

Add :— Page 114. *Lepterosius gularis*.

*Ardea asha* (nec Sykes), Barnes, *Ibis*, 1893, p. 173.

*Herodias gularis*, Reichen. *Vog. deutsch-Ost-Afr.* p. 66 (1894 : Bagamoyo).

*Lepterosius gularis*, Sharpe, *Bull. Brit. Orn. Club*, v. p. xi (1895).

*Ardea gularis*, Verbury, *Ibis*, 1896, p. 37 (Aden).

*Demigretta gularis*, Cholmley, *Ibis*, 1897, p. 209 (Berenice).

Add :— Page 116. *Lepterosius asha*.

*Lepterosius asha*, Sharpe, *Bull. Brit. Orn. Club*, v. p. xi (1895).

|                           |                              |                             |
|---------------------------|------------------------------|-----------------------------|
| a'. Ad. alb. sk.          | Fao, May 1892.               | W. D. Cumming, Esq.<br>[P.] |
| b'-d'. Ad. et juv.<br>sk. | Muscat, Arabia, Feb., March. | Surg.-Col. Jayakar<br>[P.]  |
| e', f'. Ad. alb. sk.      | Muscat, Feb.                 | Surg.-Col. Jayakar<br>[P.]  |

Page 118, line 3. Add :—

*Range*. Whole of Africa ; Moluccas and Australia.

Add :— Page 118. *Garzetta garzetta*.

*Ardea xanthopoda*, Pelz. *J. f. O.* 1860, p. 166, *Hartl. Beitr. Faun.*

*Madag.* p. 73 (1861) ; *Grand. Rev. et Mag. de Zool.* 1867, p. 420 ;

*Reichen. J. f. O.* 1877, p. 257.

*Ardea elegans*, *Hartl. Beitr. Faun. Madag.* p. 73 (1861, ex Verr.

*MSS.*) ; *Grand. Rev. et Mag. de Zool.* 1867, p. 420.

*Egretta xanthopoda*, Verr. in *Vinson's Voy. Madag.*, Ann. B, p. 3 (1865).

*Egretta elegans*, Verr. *l. c.*

*Herodias procerula*, Cab. *J. f. O.* 1868, pp. 49, 414.

*Ardea nives*, *Reichen. J. f. O.* 1877, p. 271.

*Ardea leucoptera*, var. *idæ*, Milne-Edw. & *Grand. Hist. Nat. Madag.*, Ois. p. 556, pl. cccxvi. (1885, pt.).

*Herodias garzetta*, *Reichen. Vog. deutsch-Ost-Afr.* p. 67 (1894

Ussambára ; Ugalla) ; Bourns & Worcester, *Occ. Papers Minner*

*Acad.* i p. 31 (1894 : Panay ; Siquijor).

*Garzetta garzetta*, Sharpe, *Bull. Brit. Orn. Club*, v. p. xi (1895) ;

*Handb. Brit. B.* iii. p. 77, pl. lxxvii. (1896).

*Herodias xanthopoda*, Shelley, *B. Africa*, i. p. 157 (1896).

Page 120, line 14 from bottom, for "tail 2.75" read "tail 3.7"

Add :—

|                            |                                                           |                              |
|----------------------------|-----------------------------------------------------------|------------------------------|
| h <sup>4</sup> . Ad. sk.   | Kalarash, Lower Danube,<br>May 27.                        | Seebohm Coll.                |
| i <sup>3</sup> . Ad. sk.   | Transvaal.                                                | J. E. Harting, Esq.<br>[P.]. |
| k <sup>4</sup> . ♂ ad. sk. | Baksa, Formosa, March 13,<br>1893 ( <i>P. A. Holst</i> ). | Seebohm Coll.                |
| l <sup>4</sup> . Ad. sk.   | Amoy, April ( <i>A. Swinhoe</i> ).                        | Seebohm Coll.                |
| m. Ad. sk.                 | Ayala, Mindanao, Oct 5.                                   | Prof. J. B. Steere<br>[C.].  |

Add :—

Page 122. *Garzetta nigripes*.*Egretta nigripes*, *Layard, Ibis*, 1882, p. 532 (New Caledonia).*Garzetta nigripes*, *Sharpe, Bull. Brit. Orn. Club*, v. p. xi (1895).

|                |                                              |                 |
|----------------|----------------------------------------------|-----------------|
| a. ♂ hiem. sk. | Togian Islands, Jan. ( <i>A. B. Meyer</i> ). | Tweeddale Coll. |
|----------------|----------------------------------------------|-----------------|

Add :—

Page 124. *Leucophoyx candidissima*.

*Ardea candidissima*, *Field, Auk*, xi. p. 121 (1894: Port Henderson, Jamaica); *Cooke, t. c.* p. 183 (Colorado); *A. O. U. Check-l. N. Amer. B.* 2nd ed. p. 72 (1895); *Ridgw. Man. N. Amer. B.* 2nd ed. p. 130 (1896); *Lane, Ibis*, 1897, p. 188 (Sacaya).

*Leucophoyx candidissima*, *Sharpe, Bull. Brit. Orn. Club*, iii. p. xxxix (1894), v. p. xi (1895).

|                         |                                                |                                                   |
|-------------------------|------------------------------------------------|---------------------------------------------------|
| s''. ♀ ad. sk.          | Espartilla, Argentine Republic. Feb. 28, 1890. | A. H. Holland, Esq.<br>[P.].                      |
| t'', u''. ♂ ♀ hiem. sk. | Rio de Janeiro.                                | Alex. Frv, Esq. [P.].                             |
| v''. ♀ ad. sk.          | Savana of British Guiana.                      | J. J. Quelch and F. V. McConnell, Esqrs.<br>[P.]. |

Add :—

Page 126. *Hydranassa tricolor*.*Hydranassa tricolor*, *Sharpe, Bull. Brit. Orn. Club*, v. p. xi (1895).

The specimen received from the Salvin-Godman collection from British Guiana does not bear out Mr. Ridgway's characters for the separation of this species. It is no darker than individuals from Cozumel and Florida, but has a slightly shorter bill. I do not think *H. tricolor* can be kept distinct even as a sub-species.

|               |                                                                   |                                                   |
|---------------|-------------------------------------------------------------------|---------------------------------------------------|
| a. ♂ ad. sk.  | Ourumee, British Guiana,<br>Dec. 24, 1890 ( <i>H. Whitely</i> )*. | Salvin-Godman Coll.                               |
| b. ♀ juv. sk. | Savana of British Guiana.                                         | J. J. Quelch and F. V. McConnell, Esqrs.<br>[P.]. |

\* "Bill: upper mandible brownish black; lower mandible light horn-colour; bare skin of face yellow-ochre; feet and toes light yellowish green; claws horn-colour" (*H. Whitely*).

Page 127. *Hydranassa ruficollis*.

N.B. —Spec.  $r^2$ , from Grenada, has been entered by mistake under this species, instead of under *Florida cerulea* (antea, p. 100).

Add:—

*Ardea tricolor ruficollis*, *Field, Auk*, xi, p. 121 (1894: Port Henderson, Jamaica); *A. O. U. Check-l. N. Amer. B.* 2nd ed. p. 72 (1895); *Ridgw. Man. N. Amer. B.* 2nd ed. p. 131 (1896).  
*Hydranassa ruficollis*, *Sharpe, Bull. Brit. Orn. Club*, v. p. xi (1895).

Add: Page 130. *Nyctanassa violacea*.

*Nyctanassa violacea*, *Stejneger, Proc. U.S. Nat. Mus.* x. p. 295 (1887); *Sharpe, Bull. Brit. Orn. Club*, v. p. xi (1895).  
*Nycticorax violaceus*, *Field, Auk*, xi, p. 121 (Port Henderson, Jamaica), *A. O. U. Check-l. N. Amer. B.* 2nd ed. p. 74 (1895); *Ridgw. Man. N. Amer. B.* 2nd ed. p. 133 (1896).

$g^1, h^1$ . ♂ ad. et juv. Savana of British Guiana. J. J. Quelch and F. V. McConnell, Esqrs. [P.]  
 sk.

Add:— Page 134. *Nyctanassa pauper*. (Plate I. c.)

*Nyctanassa pauper*, *Sharpe, Bull. Brit. Orn. Club*, v. p. xi (1895).

Add:— Page 135. *Agamia agami*.

*Ardea picta*, *Reichen. J. f. O.* 1877, p. 260.  
*Agamia agami*, *Sharpe, Bull. Brit. Orn. Club*, v. p. xi (1895).

Add:— Page 137. *Demiegretta sacra*.

*Demiegretta sacra*, *Bourne & Worcester, Occ. Papers Minnes. Acad.* i. p. 32 (1894: Siquijor; Masbate; Panay; Mindoro); *Le Souëff, Ibis*, 1895, p. 422 (Albatross Isl.); *Ogilvie Grant, Ibis*, 1896, p. 127 (Cape Engaño, N.E. Luzon).

|                          |                                                |                                                |
|--------------------------|------------------------------------------------|------------------------------------------------|
| $g^6$ . Ad. sk.          | Liu-Kiu Islands, Aug. ( <i>H. Pryer</i> ).     | Seebohm Coll.                                  |
| $h^6$ . ♂ ad. sk.        | Amoy, May 29, 1856 ( <i>R. Swinhoe</i> ).      | Seebohm Coll. (Type of <i>H. eulophotes</i> .) |
| $i^6$ . Juv. hiem. sk.   | Ningpo, Sept. 22, 1871 ( <i>R. Swinhoe</i> ).  | Seebohm Coll.                                  |
| $k^6$ . Ad. sk.          | Ningpo, Nov. 1, 1872 ( <i>Dr. Mackenzie</i> ). | Seebohm Coll.                                  |
| $l^6$ . Ad. aestiv. sk.  | Canton ( <i>S. Bligh</i> ).                    | Seebohm Coll.                                  |
| $m^6$ . ♂ aestiv. sk.    | Formosa ( <i>R. Swinhoe</i> ).                 | Seebohm Coll.                                  |
| $n^6$ . ♀ ad. sk.        | Cape Engaño, N.E. Luzon, April 25, 1895.       | John Whitehead, Esq. [C.]                      |
| $o^6$ . ♂ alb. sk.       | Cebu.                                          | Prof. J. B. Steere [C.]                        |
| $p^6, q^6$ . ♂ ♀ ad. sk. | Cebu, March 3, 5.                              | Prof. J. B. Steere [C.]                        |
| $r^6$ . ♂ ad. sk.        | Bohol, March 18.                               | Prof. J. B. Steere [C.]                        |
| $s^6$ . ♂ alb. sk.       | Dumaguete, Negros, Feb. 7.                     | Prof. J. B. Steere [C.]                        |
| $t^6$ . ♂ alb. sk.       | Samar, April 23.                               | Prof. J. B. Steere [C.]                        |
| $u^6$ . ♂ ad. sk.        | Marinduque, May 11.                            | Prof. J. B. Steere [C.]                        |

|                              |                                                                   |                              |
|------------------------------|-------------------------------------------------------------------|------------------------------|
| r <sup>6</sup> . Ad. sk.     | Balabac, Sept. 28.                                                | Prof. J. B. Steere [C.].     |
| w <sup>6</sup> . Ad. sk.     | Guam, Marianne Isl., Dec. 18.                                     | Hon. Walter Rothschild [P.]. |
| r <sup>6</sup> . ♂ ♀ ad. sk. | Noumea, New Caledonia,<br>May 31, July 5 ( <i>E. L. Layard</i> ). | Seebohm Coll.                |
| y <sup>6</sup> . Alb. sk.    | Honailou, New Caledonia,<br>Dec. ( <i>P. Joubert</i> ).           | Seebohm Coll.                |
| z <sup>6</sup> . Ad. sk.     | Aneiteum, New Hebrides<br>( <i>Col. Freeman</i> ).                | Seebohm Coll.                |
| a <sup>7</sup> . ♂ ad. sk.   | Wakaia, Fiji, Sept. 13 ( <i>E. L. Layard</i> ).                   | Seebohm Coll.                |
| b <sup>7</sup> . ♂ alb. sk.  | Savu. Fiji, Feb. 28 ( <i>E. L. L.</i> ).                          | Seebohm Coll.                |
| c <sup>7</sup> . ♀ juv. sk.  | Fiji, Nov. 2 ( <i>E. L. L.</i> ).                                 | Seebohm Coll.                |

Add :—

Page 145. **NYCTICORAX.**

Calherodius, *Bp. Consp. Ar.* ii. p. 139 (1855) . . . . Type.  
N. leuconotus.

Add :—

Page 146. **Nycticorax nycticorax.**

*Nycticorax nycticorax nævius*, *Field, Auk*, xi. p. 121 (1894 : Port Henderson, Jamaica); *Cooke, t. c.* p. 183 (Colorado); *A. O. U. Check-l. N. Amer. B.* 2nd ed. p. 74 (1895); *Ridgw. Man. N. Amer. B.* 2nd ed. p. 138 (1896).

*Nycticorax griseus*, *Reichen. Vög. deutsch-Ost-Afr.* p. 63 (1894); *Whitaker, Ibis*, 1895, p. 104 (N. Tunis); *Eagle Clarke, t. c.* p. 197 (Rhône delta).

*Nycticorax nycticorax*, *Sharpe, Bull. Brit. Orn. Club*, v. p. xii (1895); *Shelley, Ibis*, 1896, p. 239 (Lake Shirwa, Nyasa-land); *Sharpe, Handb. Brit. B.* iii. p. 81 (1896).

*Nyctiardea nævia*, *Christy, Ibis*, 1897, p. 341 (S. Domingo).

|                                            |                                                                   |                                                        |
|--------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------|
| l <sup>7</sup> . Ad. sk.                   | Mt. Lebanon,                                                      | S. Barody, Esq. [P.].                                  |
| m <sup>7</sup> . Ad. sk.                   | Nyasa-land.                                                       | Alfred Sharpe, Esq. [P.].                              |
| n <sup>7</sup> . ♀ ad. sk.                 | Futtehgurh, Aug. 13 ( <i>A. Anderson</i> ).                       | Seebohm Coll.                                          |
| o <sup>7</sup> . ♀ ad. sk.                 | Ningpo, China, March<br>( <i>R. Swinhoe</i> ).                    | Seebohm Coll.                                          |
| p <sup>7</sup> , q <sup>7</sup> . Juv. sk. | Amoy, Nov. ( <i>R. Swinhoe</i> ).                                 | Seebohm Coll.                                          |
| r <sup>7</sup> . Imm. sk.                  | S.W. Formosa ( <i>R. Swinhoe</i> ).                               | Seebohm Coll.                                          |
| s <sup>7</sup> . Ad. sk.                   | Luzon.                                                            | Prof. J. B. Steere [C.].                               |
| t <sup>7</sup> . ♂ ad. sk.                 | Manila, Luzon, Dec. 16.                                           | John Whitehead, Esq. [C.].                             |
| u <sup>7</sup> . ♂ ad. sk.                 | Kauai, Hawaiian Archipelago. April 1 ( <i>R. C. L. Perkins</i> ). | Joint Committee of Royal Soc. and British Assoc. [P.]. |

Add :—

Page 155. **Nycticorax tayazu-guira.**

*Nycticorax tayazu-guira*, *Sharpe, Bull. Brit. Orn. Club*, v. p. xii (1895).

*Nycticorax obscurus*, *Lane, Ibis*, 1897, p. 188 (Chili).





Page 163. *Nycticorax minahassæ*.

This species is withdrawn by the describers, who now consider it to be identical with *N. manillensis*. Cf. Meyer & Wieglesw. Abhandl. k. zool. Mus. Dresden, 1894-95, no. 8, p. 19 (1895).

Add:— Page 166. *Gorsachius melanolophus*.

*Gorsachius melanolophus*, Blyth, *B. Burm.* p. 160 (1875); Hume & Davison, *Str. F.* vi. p. 484 (1878); Godwin-Austen, *J. A. S. Beng.* xlviii. p. 21 (1878); Hume, *Str. F.* ix. pp. 230, 259 (1880); Butler, *Cat. B. S. Bomb. Pres.* p. 84 (1880: Belgium); Oates, *Handb. B. Br. Burm.* ii. p. 260 (1883); Butler, *Str. F.* ix. p. 435 (1881); Davidson, *Journ. Bomb. Nat. Hist. Soc.* vi. p. 340 (1891); Bourns & Worcester, *Occ. Papers Minnes. Acad.* i. p. 32 (1894: Masbate; Cebu; Siquijor); Ogilvie Grant, *Ibis*, 1897, p. 250 (Samar).

|                 |                                       |                          |
|-----------------|---------------------------------------|--------------------------|
| k', f. Juv. sk. | Takow, Formosa, June<br>(R. Swinhoe). | Seebohm Coll.            |
| m'. ♂ juv. sk.  | Paranas, Samar Isl.,<br>June 11.      | J. Whitehead, Esq. [C.]. |
| n'. ♀ ad. sk.   | Guamamas, Dec. 3.                     | Prof. J. B. Steere [C.]. |
| o'. Ad. sk.     | Ayala, Mindanao, Oct.                 | Prof. J. B. Steere [C.]. |

Add:— Page 169. *Gorsachius goisagi*.

|              |                                 |               |
|--------------|---------------------------------|---------------|
| m. Imm. sk.  | Yokohama, Japan (H.<br>Pryer).  | Seebohm Coll. |
| n. ♂ ad. sk. | Formosa, March (R.<br>Swinhoe). | Seebohm Coll. |

Add:— Page 170. *Syrigma cyanocephalum*.

*Syrigma cyanocephalum*, Sharpe, *Bull. Brit. Orn. Club*, v. p. xii (1895).

|            |                                 |                            |
|------------|---------------------------------|----------------------------|
| d. Ad. sk. | Rio Pilcomayo, July 1,<br>1890. | J. Graham Kerr, Esq. [C.]. |
|------------|---------------------------------|----------------------------|

Add:— Page 171. *Plerodius pileatus*.

|                         |                              |                                                   |
|-------------------------|------------------------------|---------------------------------------------------|
| n, o, p. ♂ ♀ ad.<br>sk. | Savana of British<br>Guiana. | J. J. Quelch and F. W.<br>McConnell, Esqrs. [P.]. |
|-------------------------|------------------------------|---------------------------------------------------|

Add:— Page 172. *Butorides atricapilla*.

*Butorides atricapilla*, Sjöstedt, *K. Svensk. Vet.-Akad. Handl.* xxvii. no. 1, p. 34 (1895); Sharpe, *Ibis*, 1897, p. 517 (Zulu-land).

|              |                                 |                          |
|--------------|---------------------------------|--------------------------|
| p'. Juv. sk. | Mt. Malosa, Nov. 20 (A. Whyte). | Sir H. H. Johnston [P.]. |
|--------------|---------------------------------|--------------------------|

I have come to the conclusion that Dr. Reichenow is quite right in separating *Butorides brevipes* (Heugl.) of the Aden coast from *B. atricapilla*. The adult specimens presented by Capt. Kelsall (*vide infra*) are nearly uniform slaty black below, with very few whitish streaks on the throat, and with no tawny rufous on the

throat and fore-neck. Two of his specimens have an irregular wing-patch of dingy white, as if belonging to remains of a white form such as obtains in *Demigretta sacra*. Such of the synonymy as belongs to *B. brevipes* must be struck out of that of *B. atricapilla*, as, from a re-examination of the specimens in the Museum, I find that all the plain-breasted birds come from the Red Sea coast, so that I am compelled to modify my previous statements (p. 174), and the following species must be inserted in its place, while specimens i', k', l', n', and o' must also be transferred to *B. brevipes*. Spec. m' from Ain belongs to the true *B. atricapilla*.

Page 175. Insert:—1a. *Butorides brevipes*.

*Ardea* (*Nycticorax*) *brevipes*, *Hempr. & Ehr. Symb. Phys.* fol. m, note 2 (1828).

*Butorides brevipes*, *Bp. Conspect.* ii. p. 129 (1855).

*Ardea brevipes*, *Heugl. J. f. O.* 1867, p. 283; *Hartl. P. Z. S.* 1881, p. 959 (Socotra).

*Ardea atricapilla* (*nec Afzel.*), *Finsch, Tr. Z. S.* vii. p. 297 (1870: Massowa).

*Ardea* (*Butorides*) *atricapilla*, *Blanf. Geol. & Zool. Abyes.* p. 435 (1870: Massowa).

*Ardea striata*, subsp. *brevipes*, *Reichen. J. f. O.* 1877, p. 254.

*Oeniscus brevipes*, *Heine & Reichen. Nomencl. Mus. Hein.* p. 308 (1890).

*Butorides atricapilla*, pt., *Sharpe, Cat. B.* xxvii. p. 172.

*Adult.* Differs from *B. atricapilla* in its nearly uniform grey throat, which is only slightly mottled with white and shows but a few black streaks, the tawny-rufous colour on the throat and chest being absent. Resembles *B. javanica*, but has not the white stripe behind the eye, so that the ear-coverts are uniform rusty brown. *B. brevipes* is, in fact, very nearly allied to the dingy-coloured *B. spodogaster* and *B. stagnatilis*, but has not the rusty-brown tint on the flanks, which appear to be quite grey in the Muscat specimen.

*Capt. Kelsall's specimens had the following soft parts:—*

♀ *ad.* Upper mandible dark horn-colour, lower one greenish; tarsi dark green in front, light green behind; iris yellow; orbits green.

♂ *juv.* Bill black; tarsi dark greenish horn-colour; iris yellow.

The Muscat specimen measures:—Total length 16·5 inches, culmen 2·4, wing 6·8, tail 2·3, tarsus 2.

*Hab.* Red Sea coast and island of Socotra to Muscat in Eastern Arabia.

|                          |                                                      |                               |
|--------------------------|------------------------------------------------------|-------------------------------|
| a. Ad. sk.               | Muscat, Jan. 27, 1890.                               | Surgeon-Col. Jayakar [P. — —] |
| b. ♂; c, d. ♀<br>ad. sk. | Aden, Feb. 26, 1896.                                 | Capt. H. J. Kelsall [P.].     |
| e, f. Imm. sk.           | Massowa, Abyssinian<br>coast, Aug. 24 (W.<br>Jesse). | Tweeddale Coll.               |
| g. ♀ ad. sk.             | Massowa, Aug. 25.                                    | W. T. Blanford, Esq. [C — —]  |

|                   |         |                                 |
|-------------------|---------|---------------------------------|
| <i>h.</i> Ad. sk. | Suakin. | Capt. Carpenter [P.].           |
| <i>i.</i> Ad. sk. | Suakin. | Surgeon-Captain Penton<br>[P.]. |

Add:— Page 175. *Butorides striata*.

*Ardea cyanura*, *Phelps, Auk*, xiv. p. 367 (1897: Bermudez, Venezuela).

|                        |                                             |                                          |
|------------------------|---------------------------------------------|------------------------------------------|
| <i>f, g.</i> ♂ ad. sk. | Santa Elena, Uruguay, Nov.,<br>Feb.         | O. V. Aplin, Esq.<br>[C.].               |
| <i>h.</i> Ad. sk.      | Parana Boyassu, Lower<br>Amazon, Jan. 1896. | F. O. Pickard-Cam-<br>bridge, Esq. [P.]. |

Page 175. Add:—*Butorides robinsoni*.

*Butorides robinsoni*, *Ridgw. Proc. U.S. Nat. Mus.* xviii. p. 655 (1896).

This species appears to be closely related to *B. striata*, but is considerably smaller, and the colour of the fore and hind neck and edge of wing approaches that of *B. virescens*. (*Ridgway*.)

*Hab.* Margarita Island.

Add:— Page 177. *Butorides javanica*.

*Butorides javanica*, *Bourns & Worcester, Occ. Papers Minnes. Acad.* i. p. 32 (1894: Tawi Tawi, Calamianes, Mindoro, Tablas, Sibuyan, Masbate, Siquijor); *Ogilvie Grant, Ibis*, 1895, p. 267 (Albay, S.E. Luzon); *Shelley, B. Afr.* i. p. 157 (1896).

|                                                           |                                                           |                               |
|-----------------------------------------------------------|-----------------------------------------------------------|-------------------------------|
| <i>m<sup>s</sup>-o<sup>s</sup>.</i> Ad. sk.               | Pachim, Siam, March 1897<br>( <i>Stanley S. Flower</i> ). | Royal Siamese<br>Museum [E.]. |
| <i>p<sup>s</sup>.</i> ♀ juv. sk.                          | S.W. Formosa, Nov. 9 ( <i>P. A.</i><br><i>Holst</i> ).    | Seeböhm Coll.                 |
| <i>q<sup>s</sup>.</i> ♂ ad. sk.                           | Manitoe, Albay distr., S.E.<br>Luzon, Aug. 8.             | John Whitehead,<br>Esq. [C.]. |
| <i>r<sup>s</sup>.</i> ♂ juv. sk.                          | Luzon, Aug. 20.                                           | Prof. J. B. Steere<br>[C.].   |
| <i>s<sup>s</sup>.</i> ♀ ad. sk.                           | Calauan, Luzon, July 17.                                  | Prof. J. B. Steere<br>[C.].   |
| <i>t<sup>s</sup>.</i> ♀ juv. sk.                          | Cebu, March 17.                                           | Prof. J. B. Steere<br>[C.].   |
| <i>u<sup>s</sup>.</i> ♂ ad. sk.                           | Guimaras, June 7.                                         | Prof. J. B. Steere<br>[C.].   |
| <i>v<sup>s</sup>.</i> ♀ imm. sk.                          | Concepcion, Panay, Jan. 16.                               | Prof. J. B. Steere<br>[C.].   |
| <i>w<sup>s</sup>, x<sup>s</sup>.</i> ♀ ad. sk.            | Marinduque, May 12.                                       | Prof. J. B. Steere<br>[C.].   |
| <i>y<sup>s</sup>, z<sup>s</sup>.</i> ♀ ad. et<br>juv. sk. | Ayala, Mindanao, Oct. 24,<br>Nov. 28.                     | Prof. J. B. Steere<br>[C.].   |

Add:— Page 181. *Butorides amurensis*.

*Butorides amurensis*, *Everett, Ibis*, 1895, p. 38 (Palawan).

|                       |                             |               |
|-----------------------|-----------------------------|---------------|
| <i>i, k.</i> ♂ ♀ ad.; | Amoor Guif, E. Siberia,     | Seeböhm Coll. |
| <i>l.</i> ♂ juv. sk.  | Aug. 15 ( <i>Dörries</i> ). |               |

|               |                                                    |                            |
|---------------|----------------------------------------------------|----------------------------|
| m. ♂ ad. sk.  | Okinawa-Shima, April 4                             | Seebohm Coll.              |
|               | (P. A. Holst).                                     |                            |
| n. ♂ ad. sk.  | Amoy, Aug. 25 (R. Swinhoe).                        | Seebohm Coll.              |
| o. Ad. sk.    | Formosa, March (R. Swinhoe).                       | Seebohm Coll.              |
| p. ♂ ad. sk.  | Samar Island, Philippine Archipelago, April 6.     | Prof. J. B. Steere [C.].   |
| q. ♀ imm. sk. | La Trinidad, Benguet district, N.W. Luzon, Feb. 1. | John Whitehead, Esq. [C.]. |
| r. ♂ ad. sk.  | Tondano Lake, N Celebes, 2000 feet, Nov.           | C. Hose, Esq. [C.].        |

Add:— Page 183. *Butorides stagnatilis*.

|                           |                                     |               |
|---------------------------|-------------------------------------|---------------|
| e'. ♂ ad.; f'. ♀ juv. sk. | Suva, Fiji, Feb. 14 (E. L. Layard). | Seebohm Coll. |
|---------------------------|-------------------------------------|---------------|

Add:— Page 185. *Butorides sundevalli*.

*Butorides plumbeus*, Ridgw. *Proc. U.S. Nat. Mus.* xix. p. 602 (1896).  
*Butorides sundevalli*, Reichen. *J. f. O.* 1877, p. 253; Sharpe, *Bull. Brit. Orn. Club*, v. p. xii (1885).

Add:— Page 186. *Butorides virescens*.

*Ardea virescens*, Field, *Auk*, xi. p. 121 (1894: Port Henderson, Jamaica); Stone, t. c. p. 136 (New Jersey; summer); A. O. U. *Check-l. N. Amer. B.* 2nd ed. p. 73 (1895); Young, *Auk*, xiii. p. 281 (1896: Pennsylvania); Bailey, t. c. p. 292 (Pennsylvania); Ridgw. *Man. N. Amer. B.* 2nd ed. p. 132 (1896); Christy, *Ibis*, 1897, p. 339 (S. Domingo).

*Ardea virescens frazari*, A. O. U. *Check-l. N. Amer. B.* 2nd ed. p. 73 (1895); Ridgw. *Man.* 2nd ed. p. 586 (1896).

*Ardea brunnescens*, Ridgw. *Man.* 2nd ed. p. 131 (1896).

*Butorides virescens*, Underwood, *Ibis*, 1897, p. 450 (Miravalles, Costa Rica).

|               |                                         |                                 |
|---------------|-----------------------------------------|---------------------------------|
| b'. ♀ ad. sk. | Andros Island, Bahamas, April 18, 1896. | Neville Chamberlain, Esq. [P.]. |
|---------------|-----------------------------------------|---------------------------------|

Page 186. Add:—*Butorides anthonyi*.

*Ardea virescens anthonyi*, Mearns, *Auk*, xii. p. 257 (1895: Lower California); Ridgw. *Man. N. Amer. B.* 2nd ed. p. 586 (1896); Rep. A. O. U. *Comm. Auk*, xiv. p. 119 (1897).

Similar to *Ardea (Butorides) virescens* of the Eastern United States, but slightly larger and paler throughout, with the light markings of the wings, neck, and throat much less restricted and whiter. (E. A. Mearns.)

*Hab.* Colorado desert, Lower California.

I have not seen a specimen of this race, which is probably not distinct from *B. virescens*.

Add :— Page 191. **TIGRORNIS.** Type  
*Tigrornis*, Sharpe, Bull. Brit. Orn. Club, v. p. xiv  
 (1895) ..... *T. leucolopha*.

Add :— Page 191. *Tigrornis leucolopha*.  
*Tigrornis leucolopha*, Shelley, B. Afr. i. p. 153 (1896).

Add :— Page 194. *Tigrisoma lineatum*.  
*Tigrisoma lineatum*, Sharpe, Bull. Brit. Orn. Club, v. p. xii (1895).  
 ♂, ♀, Ad. et juv. sk. British Guiana. J. J. Queich & F. V.  
 McConnell, Esqrs. [P.]

Add :— Page 195. *Tigrisoma marmoratum*.  
*Tigrisoma marmoratum*, Graham Kerr, Ibis, 1892, p. 145; Sharpe,  
 Bull. Brit. Orn. Club, v. p. xii (1895).  
 ♂, Ad. sk. Fortin Page, Rio Pilcomayo, J. Graham Kerr, Esq.  
 July 25, 1890. [C.]

Add :— Page 196. *Tigrisoma bahia*. (Plate II. A.)  
*Tigrisoma bahia*, Sharpe, Bull. Brit. Orn. Club, v. p. xiv (1895).

Add :— Page 196. *Tigrisoma fasciatum*.  
*Tigrisoma fasciatum*, Sharpe, Bull. Brit. Orn. Club, v. p. xii  
 (1895).

Add :— Page 197. *Tigrisoma salmoni*.  
*Tigrisoma salmoni*, Sharpe, Bull. Brit. Orn. Club, v. p. xii (1895).

Add :— Page 198. **HETEROCHUS.** Type  
*Heterochus*, Sharpe, Bull. Brit. Orn. Club, v. p. xiv  
 (1895) ..... *H. cabanisi*.

Add :— Page 198. *Heterochus cabanisi*.  
*Tigrisoma cabanisi*, Underwood, Ibis, 1896, p. 450 (Costa Rica).

Add :— Page 202. *Ardeola ralloides*.  
*Ardea ralloides*, Reichen. J. f. O. 1877, p. 256; Whitaker, Ibis, 1895,  
 p. 104 (N. Tunis).  
*Ardeola ralloides*, Sharpe, Bull. Brit. Orn. Club, v. p. xii (1895);  
 id. Handb. Brit. B. iii. p. 83 (1896).  
*Herodias ralloides*, Shelley, Ibis, 1896, p. 239 (Lake Shirwa);  
 id. B. Afr. i. p. 153 (1896).

|                        |                                                          |                            |
|------------------------|----------------------------------------------------------|----------------------------|
| <i>z'</i> . Ad. sk.    | Lower Danube, May 27 ( <i>H. &amp;</i> ).                | Seebohm Coll.              |
| <i>a''</i> . Ad. sk.   | Near Seville ( <i>A. Ruiz</i> ).                         | Hargitt Coll.              |
| <i>b''</i> . Juv. sk.  | Potchefstroom, Jan. 3 ( <i>T. Ayres</i> ).               | Seebohm Coll.              |
| <i>c''</i> . ♂ ad. sk. | Zomba Plain, Nyasa-land,<br>Dec. 21 ( <i>A. Whyte</i> ). | Sir H. H. Johnston<br>[P.] |

Add:— Page 206. *Ardeola idæ*.

*Ardeola idæ*, *Sharpe*, *Bull. Brit. Orn. Club*, v. p. xii (1895); *id.*  
*Handb. Brit. B.* iii. p. 86 (1896).  
*Herodias idæ*, *Shelley*, *B. Afr.* i. p. 157 (1896).

Add:— Page 207. *Ardeola grayi*.

*Ardeola grayi*, *Sharpe*, *Bull. Brit. Orn. Club*, v. p. xii (1895).

|                                                       |                                                               |                                |
|-------------------------------------------------------|---------------------------------------------------------------|--------------------------------|
| <i>o<sup>a</sup></i> . Imm. sk.                       | Pachim, Siam, March 11, 1897<br>( <i>Stanley S. Flower</i> ). | Royal Siamese Mu-<br>seum [E.] |
| <i>p<sup>a</sup></i> , <i>q<sup>a</sup></i> . Ad. sk. | Kabin, Siam, March 20, 1897<br>( <i>Stanley S. Flower</i> ).  | Royal Siamese Mu-<br>seum [E.] |

Add:— Page 211. *Ardeola bacchus*.

*Ardeola bacchus*, *Sharpe*, *Bull. Brit. Orn. Club*, v. p. xii (1895).

|                       |                                        |               |
|-----------------------|----------------------------------------|---------------|
| <i>n'</i> . ♂ ad. sk. | Foochow, May 22 ( <i>R. Swinhoe</i> ). | Seebohm Coll. |
| <i>o'</i> . Juv. sk.  | Foochow, winter ( <i>R. Swinhoe</i> ). | Seebohm Coll. |
| <i>p'</i> . Imm. sk.  | Foochow ( <i>Campbell</i> ).           | Seebohm Coll. |
| <i>q'</i> . ♂ ad. sk. | Amoy, Feb. 3 ( <i>R. Swinhoe</i> ).    | Seebohm Coll. |
| <i>r'</i> . ♂ ad. sk. | Amoy, April 21 ( <i>R. Swinhoe</i> ).  | Seebohm Coll. |
|                       | (Type of <i>A. prasinoscelis</i> .)    |               |
| <i>s'</i> . Ad. sk.   | Formosa, Dec. ( <i>R. Swinhoe</i> ).   | Seebohm Coll. |

Add:— Page 213. *Bubulcus lucidus*.

*Bubulcus lucidus*, *Sharpe*, *Bull. Brit. Orn. Club*, v. p. xiii (1895);  
*id.* *Handb. Brit. B.* iii. p. 86 (1896).  
*Ardea bubulcus*, *Yerbury*, *Ibis*, 1896, p. 37 (Aden: Lahej, breeding).  
*Herodias lucidus*, *Shelley*, *B. Africa*, i. p. 157 (1896).

|                                   |                                                  |                             |
|-----------------------------------|--------------------------------------------------|-----------------------------|
| <i>a''</i> . ♀ ad. sk.            | La Marisma, S. Spain, May<br>( <i>A. Ruiz</i> ). | Seebohm Coll.               |
| <i>b''</i> . ♀ ad. sk.            | Seville, June ( <i>A. Ruiz</i> ).                | Hargitt Coll.               |
| <i>c''</i> . ♂ ad. sk.            | Marocco ( <i>Olcese</i> ).                       | Hargitt Coll.               |
| <i>d''</i> , <i>e''</i> . Ad. sk. | Aden.                                            | Col. Yerbury [P.].          |
| <i>f''</i> . Ad. sk.              | Lahej, near Aden, Feb. 25.                       | Capt. Nurse [P.].           |
| <i>g''</i> . Ad. sk.              | Transvaal ( <i>J. Clark</i> ).                   | J. E. Harting, Esq<br>[P.]. |
| <i>h''</i> . ♂ ad. sk.            | Potchefstroom, Feb. 24<br>( <i>T. Ayres</i> ).   | Seebohm Coll.               |
| <i>i''</i> . Ad. sk.              | Kampala, Uganda, Dec. 5.                         | Dr. Ansorge [C.].           |

Add:— Page 217. *Bubulcus coromandus*.

*Bubulcus coromandus*, *Hume*, *Str. F.* i. p. 256 (1873); *Ball*, *Str. F.*  
ii. p. 434 (1874); *Armstrong*, *Str. F.* iv. p. 349 (1876); *Hume*,

*Str. F.* xi. p. 333 (1888: Manipur); *Bourns & Worcester, Occ. Papers Minnes. Acad.* i. p. 32 (1894: Tablas, Masbate); *Ogilvie Grant, Ibis*, 1895, p. 267 (Catanduanes); *Jesse, Ibis*, 1897, p. 561 (Lucknow).

*Buphus coromandus*, *Butler, Str. F.* iv. p. 23 (1876); *Fairbank, t. c.* p. 263; *Hume & Davison, Str. F.* vi. p. 481 (1878).

|                            |                                                |                            |
|----------------------------|------------------------------------------------|----------------------------|
| ♂ <sup>4</sup> . Ad. sk.   | Amoy ( <i>R. Swinhoe</i> ).                    | Seebohm Coll.              |
| ♂ <sup>4</sup> . Ad. sk.   | S.W. Formosa ( <i>R. Swinhoe</i> ).            | Seebohm Coll.              |
| ♂ <sup>4</sup> . Ad. sk.   | Verac, Catanduanes Isl., S.E. Luzon, Sept. 21. | John Whitehead, Esq. [C.]. |
| ♂ <sup>4</sup> . ♀ ad. sk. | Sibulan, Negros, March 2.                      | Prof. J. B. Steere [C.].   |
| ♂ <sup>4</sup> . ♂ ad. sk. | Concepcion, Panay, Jan. 17.                    | Prof. J. B. Steere [C.].   |
| ♀ <sup>4</sup> . ♀ ad. sk. | Guimaras, Jan. 26.                             | Prof. J. B. Steere [C.].   |
| ♀ <sup>4</sup> . ♀ ad. sk. | Ayala, Mindanao, Oct. 5.                       | Prof. J. B. Steere [C.].   |
| ♂ <sup>4</sup> . Ad. sk.   | Puerto Princesa, Palawan, Sept.                | Prof. J. B. Steere [C.].   |
| ♂ <sup>4</sup> . Ad. sk.   | Balabac, Sept. 26.                             | Prof. J. B. Steere [C.].   |

Add:— Page 222. *Ardetta minuta*.

*Ardea minuta*, *Hume, Nests & Eggs Ind. B.* p. 624 (1873); *Oates, ed. Hume's Nests & Eggs Ind. B.* iii. p. 257 (1890); *Whitaker, Ibis*, 1895, p. 104 (N. Tunis); *Eagle Clarke, t. c.* p. 197 (Rhone delta); *Sharpe, Bull. Brit. Orn. Club*, v. p. xiii (1895); *id. Handb. Brit. B.* iii. p. 89, pl. lxviii. (1896).

|                            |                                                       |               |
|----------------------------|-------------------------------------------------------|---------------|
| ♂ <sup>4</sup> . Juv. st.  | Havre, N. France, Oct. 10, 1872 ( <i>V. Pluche</i> ). | Hargitt Coll. |
| ♂ <sup>4</sup> . ♂ ad. st. | Near Elbœuf ( <i>Noury</i> ).                         | Hargitt Coll. |
| ♂ <sup>4</sup> . ♂ ad. sk. | Tschinas, Turkestan, April 23 ( <i>V. Russow</i> ).   | Seebohm Coll. |
| ♂ <sup>4</sup> . ♀ ad. sk. | Lenkoran, May 13.                                     | Seebohm Coll. |

Add:— Page 225. *Ardetta podicipes*.

*Ardetta podicipes*, *Sharpe, Bull. Brit. Orn. Club*, v. p. xiii (1895).  
*Ardetta podiceps*, *Yerbury, Ibis*, 1896, p. 37 (Aden); *Shelley, B. Afr.* i. p. 158 (1896).

Add:— Page 227. *Ardetta sinensis*.

*Ardetta sinensis*, *Legge, B. Ceylon*, p. 1156 (1880); *Bourns & Worcester, Occ. Papers Minnes. Acad.* i. p. 32 (1894: Tawi Tawi; Calamianes; Mindoro; Tablas; Sibulan; Masbate; Siquijor); *Ogilvie Grant, Ibis*, 1896, p. 127 (Cape Engaño, N.E. Luzon).

|                             |                                      |               |
|-----------------------------|--------------------------------------|---------------|
| ♂ <sup>4</sup> . ♀ ad. sk.  | Hakodadi, Aug. ( <i>Blakiston</i> ). | Seebohm Coll. |
| ♂ <sup>4</sup> . Ad. sk.    | Canton ( <i>S. Bligh</i> ).          | Seebohm Coll. |
| ♂ <sup>4</sup> , ♀. Ad. sk. | Amoy, July ( <i>R. Swinhoe</i> ).    | Seebohm Coll. |
| ♂ <sup>4</sup> . Juv. sk.   | Formosa ( <i>P. A. Holst</i> ).      | Seebohm Coll. |



|                                               |                                                  |                                   |
|-----------------------------------------------|--------------------------------------------------|-----------------------------------|
| n <sup>1</sup> . ♀ ad. sk.                    | Manila Bay, Luzon, April 11.                     | John Whitehead,<br>Esq. [C.].     |
| o <sup>2</sup> . ♂ ad. sk.                    | Mindoro, June 10.                                | D. C. Worcester,<br>Esq. [C.].    |
| p <sup>3</sup> . ♀ ad. sk.                    | Marinduque, May 17.                              | Prof. J. B. Steere,<br>[C.].      |
| q <sup>1</sup> , r <sup>2</sup> . ♂ ♀ ad. sk. | Guam, Caroline Islands, Feb. 8<br>(Alan Ouston). | Hon. Walter Roth-<br>schild [P.]. |

Add:— Page 231. *Ardetta exilis*.

*Ardetta exilis*, Field, *Auk*, xi. p. 121 (1894: Port Henderson, Jamaica); *A. O. U. Check-l. N. Amer. B.* p. 70 (1895).

*Botaurus exilis*, Cooke, *Auk*, xi. p. 183 (1894: Colorado); *Ridgw. Man. N. Amer. B.* p. 127 (1896).

|                       |                            |                              |
|-----------------------|----------------------------|------------------------------|
| δ'', e''. ♂ ad. sk.   | Lake Ontario, Canada West. | O. J. Phelps, Esq.<br>[P.].  |
| δ'', e''. ♂ ♀ ad. sk. | Toronto.                   | J. H. Fleming, Esq.<br>[P.]. |

Add:— Page 233. *Ardetta neoxena*.

*Ardetta neoxena*, *A. O. U. Check-l. N. Amer. B.* 2nd ed. p. 70 (1895); *Chapman, Auk*, xiii. p. 11, pl. i. (1896); *Cherrie, t. c.* p. 79 (Wisconsin); *Ames, Auk*, xiv. p. 411 (1897: Toronto).

*Botaurus neoxenus*\*, *Ridgw. Man. N. Amer. B.* 2nd ed. p. 127 (1896).

Add:— Page 234. *Ardetta erythromelas*.

*Ardetta erythromelas*, Sharpe, *Bull. Brit. Orn. Club*, v. p. xiii (1895).

|             |                           |                                                    |
|-------------|---------------------------|----------------------------------------------------|
| f. Juv. sk. | Savana of British Guiana. | J. J. Quelch & F. V.<br>McConnell, Esqrs.<br>[P.]. |
|-------------|---------------------------|----------------------------------------------------|

Add:— Page 235. *Ardetta involucris*.

*Hab.* British Guiana.

|            |                           |                                                    |
|------------|---------------------------|----------------------------------------------------|
| g. Ad. sk. | Savana of British Guiana. | J. J. Quelch & F. V.<br>McConnell, Esqrs.<br>[P.]. |
|------------|---------------------------|----------------------------------------------------|

Add:— Page 236. *Ardetta cinnamomea*.

*Ardetta cinnamomea*, Bourns & Worcester, *Occ. Papers Minnes. Acad.* i. p. 32 (1894: Cebu; Tawi Tawi; Tablas); *Ogilvie Grant, Ibis*, 1895, p. 206 (Catanduanes Isl., Luzon), 1896, p. 127 (Manila Bay, N.E. Luzon).

|                            |                                           |                     |
|----------------------------|-------------------------------------------|---------------------|
| s <sup>4</sup> . ♀ ad. sk. | Etawah district, Feb. 5 (A.<br>Anderson). | Seebohm Coll.       |
| t <sup>5</sup> . Juv. sk.  | Calcutta.                                 | Godwin-Austen Coll. |

\* Not *neoxenus*, as printed by mistake, *antea*, p. 233.

|                                               |                                                      |                           |
|-----------------------------------------------|------------------------------------------------------|---------------------------|
| u <sup>1</sup> , v <sup>1</sup> . Ad. sk.     | Garo Hills.                                          | Godwin-Austen Coll.       |
| w <sup>1</sup> , x <sup>1</sup> . ♂ ♀ ad. sk. | Fungshan, Formosa, Dec., Jan. (R. Swinhoe).          | Seebohn Coll.             |
| y <sup>1</sup> . ♀ ad. sk.                    | S.W. Formosa (R. Swinhoe).                           | Seebohn Coll.             |
| z <sup>1</sup> . ♀ imm. sk.                   | Kamana, Formosa, Feb. 2 (P. A. Holst).               | Seebohn Coll.             |
| a <sup>2</sup> . ♀ ad. sk.                    | La Trinidad, Benguet district, N.W. Luzon, March 17. | John Whitehead, Esq. [C.] |
| b <sup>2</sup> . ♀ ad. sk.                    | Manila Bay, Luzon, April 25.                         | John Whitehead, Esq. [C.] |
| c <sup>2</sup> . ♂ ad. sk.                    | Catanduanes Isl., Sept. 18.                          | John Whitehead, Esq. [C.] |
| d <sup>2</sup> . ♂ ad. sk.                    | Luzon, Aug. 20.                                      | Prof. J. B. Steere [C.]   |
| e <sup>2</sup> . ♀ ad. sk.                    | Calauan, Luzon, July 13.                             | Prof. J. B. Steere [C.]   |
| f <sup>2</sup> . ♂ ad. sk.                    | Concepcion, Panay, Jan. 16.                          | Prof. J. B. Steere [C.]   |
| g <sup>2</sup> . ♂ ad. sk.                    | Guimaras, Jan. 6.                                    | Prof. J. B. Steere [C.]   |
| h <sup>2</sup> . Ad. sk.                      | Mindanao, Oct.                                       | Prof. J. B. Steere [C.]   |
| i <sup>2</sup> . ♂ ad. sk.                    | Ayala, Mindanao, Oct.                                | Prof. J. B. Steere [C.]   |
| k <sup>2</sup> . ♀ ad. sk.                    | Marinduque, May 12.                                  | Prof. J. B. Steere [C.]   |
| l <sup>2</sup> . ♀ ad. sk.                    | Calapan, Mindoro, May 20.                            | Prof. J. B. Steere [C.]   |

Add:—

Page 242. *Nannocnus eurythmus*.

|                           |                                           |                                   |
|---------------------------|-------------------------------------------|-----------------------------------|
| p. q. ♂ ; r. s. ♀ ad. sk. | Chefoo, May (R. Swinhoe).                 | Seebohn Coll. (Types of species.) |
| t. ♂ ad. sk.              | Ayala, Mindanao, Oct. 6.                  | Prof. J. B. Steere [C.]           |
| u. ♀ ad. sk.              | Mindanao, Oct. 1888.                      | F. S. Bourns, Esq. [C.]           |
| v. ♀ ad. sk.              | Tondano Lake, N. Celebes, 2000 feet, Oct. | C. Hoebe, Esq. [C.]               |

Add:—

Page 247. *Dupetor flavicollis*.

*Ardetta flavicollis*, Bourns & Worcester, Occ. Papers Minnes. Acad. i. p. 32 (1894 : Cebu).

|                             |                              |               |
|-----------------------------|------------------------------|---------------|
| a <sup>3</sup> . ♀ juv. sk. | Ningpo, Aug. (R. Swinhoe).   | Seebohn Coll. |
| b <sup>3</sup> . Ad. sk.    | Hankow, summer (R. Swinhoe). | Seebohn Coll. |
| c <sup>3</sup> . Ad. sk.    | Foochow (Campbell)           | Seebohn Coll. |

Add:—

Page 253. *Botaurus stellaris*.

*Botaurus stellaris*, Whitaker, *Ibis*, 1895, p. 104 (N. Tunis); *Eagle Clarke*, t. c. p. 197 (Rhône delta); *Sharpe*, *Handb. Brit. B.* iii. p. 92, pl. lxi. (1896); *H. L. Popham*, *Ibis*, 1897, p. 99 (Tessinsk).

|                  |                                                                       |               |
|------------------|-----------------------------------------------------------------------|---------------|
| u'. ♂ ad. sk.    | St. Vigors, near Havre, N. France, Dec. 7, 1875 ( <i>V. Pluche</i> ). | Hargitt Coll. |
| v'. Ad. sk.      | Attrek River ( <i>Napier</i> ).                                       | Seebohm Coll. |
| w' y'. ♀ ad. sk. | Futtehgurh district, Dec.-March ( <i>A. Anderson</i> ).               | Seebohm Coll. |
| x'. Ad. sk.      | Swatow ( <i>R. Swinhoe</i> ).                                         | Seebohm Coll. |
| y'. Ad. sk.      | Chefoo, Oct. 6 ( <i>R. Swinhoe</i> ).                                 | Seebohm Coll. |
| b'. ♀ ad. sk.    | Hakodadi, Japan, May ( <i>Capt. Blakiston</i> ).                      | Seebohm Coll. |

Add:— Page 258. *Botaurus pœciloptilus*.

|                 |                                                            |                           |
|-----------------|------------------------------------------------------------|---------------------------|
| t. Ad. sk.      | New Zealand.                                               | Sir Samuel Scott<br>[P.]. |
| u, v. ♂ ad. sk. | Noumea, New Caledonia, July, Oct. ( <i>E. L. Layard</i> ). | Seebohm Coll.             |

Add:— Page 259. *Botaurus lentiginosus*.

*Botaurus lentiginosus*, *Richm. & Knowlton, Auk*, xi. p. 302 (1894 : Montana) ; *A. O. U. Check-l. N. Amer. B.* 2nd ed. p. 70 (1895) ; *Ridgw. Man. N. Amer. B.* 2nd ed. p. 126 (1896) ; *Sharpe, Handb. Brit. B.* iii. p. 95 (1896).

## Family II. BALÆNICIPITIDÆ.

## 1. BALÆNICEPS.

*Balæniceps*, Gould, *P. Z. S.* 1851, p. 1 ..... Type.  
B. rex.

*Range.* The region of the Upper White Nile.

1. *Balæniceps rex*.

*Balæniceps rex*, Gould, *P. Z. S.* 1851, p. 1, pl. xxxv. (Upper White Nile); Jardine, *Contr. Orn.* 1851, p. 11, pl. 68; *Bp. Consp. Av.* ii. p. 143 (1855); Heugl. *J. f. O.* 1855, p. 65; Brehm, *tom. cit.* p. 488 (Kartoum); Heugl. *Syst. Uebers.* p. 60 (1856); Parker, *Trans. Zool. Soc.* iv. pp. 269–351, pls. lxiv.–lxvii. (1860); Reinh. *P. Z. S.* 1860, p. 377; Bartlett, *P. Z. S.* 1861, pp. 131–134, figs. 1–3 (pterylography); A. Newton, *Ibis*, 1862, p. 79; Hartm. *J. f. O.* 1864, p. 235 (Gazelle R.); Antin. *Cat. descr. Ucc.* p. 105 (1864); Wolf, *Zool. Sketches*, 2nd series (1864); Schl. *Dierent.* p. 246, cum fig. (1872); Gray, *Hand-l. B.* iii. p. 34, no. 10183 (1871); Heugl. *Orn. N.O.-Afr.* ii. p. 1095 (1873); Reichen. *J. f. O.* 1877, pp. 232, 276; Hartl. *Ibis*, 1883, p. 233; Johnston, *tom. cit.* p. 578 (Cunéné); id. *River Congo*, p. 370 (1884); Sharpe, ed. *Layard's B. S. Afr.* p. 727 (1884); Beddard, *P. Z. S.* 1888, pp. 284–290 (anatomy); Junker, *Travels in Africa*, pp. 45, 65 (1892: White Nile).

*Adult.* General colour above dark ashy, the feathers of the mantle, scapulars, and wing-coverts having a slight greenish gloss and fringed with dull white; the median and greater coverts light ashy grey at their ends; quills and tail blackish, with a slight greenish or purplish gloss, the inner secondaries like the back; head and nape, which is slightly crested, dark slaty grey; sides of face, neck, and under surface of body paler and more hoary grey, with some lanceolate black-centred feathers on the fore-neck; abdomen and under tail-coverts white: “bill ochraceous, obliquely streaked with dusky blackish; lores and feet leaden black; bare part of chin olivaceous; iris sometimes pale yellowish, sometimes greyish white; palate and tongue ashy flesh-colour” (Heuglin). Total length about 46 inches, culmen 8.1, wing 26, tail 10, tarsus 10.

*Young.* Everywhere browner, and not so ashy in colour as the adults.

*Hab.* Upper White Nile.

a. Ad. st.  
b. Juv. st.  
c. Skeleton.  
d. Skull.

White Nile.  
White Nile.

Purchased.  
Consul Petherick [C].  
Zool. Soc.  
Zool. Soc.

## Family III. SCOPIDÆ.

## 1. SCOPUS.

|                                                                  |                       |
|------------------------------------------------------------------|-----------------------|
| <i>Scopus</i> , <i>Gmelin, Syst. Nat.</i> i. p. 618 (1788) ..... | Type.<br>S. umbretta. |
| <i>Cephus</i> , <i>Wagler, Syst. Av.</i> 1827, p. 73 .....       | S. umbretta.          |

*Range.* The entire Ethiopian Region.

1. *Scopus umbretta*.

*L'Ombrette*, *Brisson, Orn.* v. p. 508 (1760); *Buff. Hist. Nat. Ois.* vii. p. 440 (1780).

*L'Ombrette du Sénégal*, *D'Aubert. Pl. Enl.* viii. pl. 706.

The Umbre, *Brown, Illustr. Zool.* p. 90, pl. xxxv. (1776).

Tufted Umbre, *Lath. Gen. Syn.* iii. pt. 1, p. 30, pl. lvii. (1785).

*Scopus umbretta*, *Gm. Syst. Nat.* i. p. 618 (1788); *Stephens*, in *Shaw's Gen. Zool.* xi. pt. 2, p. 686, pl. 50 (1819); *Bowd. Excurs. Africa*, p. 230 (1825); *Denham & Clapperton, Travels in Africa*, ii. App. p. 202 (1826); *Less. Traité d'Orn.* p. 577 (1831); *Vieill. Gal. Ois.* ii. p. 250 (1834); *Rupp. Syst. Uebers.* p. 121 (1845: Senaar and Abyssinia); *Gray, Gen. B.* iii. p. 588 (1847); *Reichenb. Gall.* tab. 86. fig. 513 (1848); *Licht. Nomencl. Mus. Berol.* p. 90 (1854: N. Africa; Arabia); *Bp. Conspect. Av.* ii. p. 144 (1855); *Heugl. Syst. Uebers.* p. 60 (1856: Senaar; White Nile; Abyssinia); *Hartl. Orn. Westafr.* p. 229 (1857: Senegambia; Cazanmanze; Gaboon; Congo); *Schl. Handl. Dierkunde*, ii. p. 422, pl. vii. fig. 85 (1857); *Gurney, Ibis*, 1859, p. 248 (Natal); *Cass. Proc. Acad. Nat. Sci. Philad.* 1859, p. 174 (Caima and Muni Rivers); *Grill. Zool. Anteckn.* pp. 11, 55 (1859); *Hartl. Faun. Madag.* p. 76 (1861); *id. J. f. O.* 1861, p. 270 (Bissao); *Mont. Ibis*, 1862, p. 333 (Angola); *Schl. Mus. Pays-Bas, Ciconiæ*, p. 15 (1863: S. Africa; Kaffraria; Abyssinia); *Roch & Newt. Ibis*, 1863, p. 170 (Madagascar); *Scl. P. Z. S.* 1863, p. 164 (Moromanga, Madagascar); *Pollen, Nat. Tijdschr. Dierk.* i. p. 321 (1863); *Kirk, Ibis*, 1864, p. 333 (Zambesi); *Antin. Cat. descr. Ucc.* p. 105 (1864); *Scl. P. Z. S.* 1864, p. 114 (common on the coast of Kazeh); *Layard, B. S. Afr.* p. 312 (1867); *Grandid. Rev. et Mag. de Zool.* 1867, p. 420 (S E. coast of Madagascar); *Chapm. Travels S. Afr.* ii. App. p. 418 (1868); *Schl. & Poll. Faune Madag., Ois.* p. 128 (1868); *Cab. in Von der Decken's Reis., Vög.* p. 48 (1869); *Blanf. Geol. & Zool. Abyss.* p. 436 (1870); *Finsch, Trans. Zool. Soc.* vii. p. 298 (1870); *id. & Hartl. Vög. Ostaf.* p. 727 (1870); *Gray, Hand-l. B.* iii. p. 34, no. 10181 (1871); *Ayres, Ibis*, 1871, p. 265 (Transvaal); *Schl. Dierent.* p. 244, cum fig. (1872); *Gurney in Anders. B. Dam. Ld.* p. 294 (1872: Damara & Great Namaqua-land); *Antin. & Salvad. Viagg. Bogos*, p. 150 (1873: Anseba); *Heugl. Orn. N.O.-Afr.* ii. p. 1091 (1873); *Buckley, Ibis*, 1874, p. 389 (Limpopo River); *Reichen. J. f. O.* 1874, p. 379 (Gold Coast); *id. op. cit.* 1875, p. 48; *Bartlett, P. Z. S.* 1875, p. 68 (Madagascar); *Shelley, Ibis*, 1875, p. 86 (Durban); *Sharpe & Bouvier, Bull. Soc. Zool. France*, i. p. 53 (1876: Landana); *Bocage, J. f. O.* 1876, p. 306 (Rio Chimba);

*Hartl. Vög. Madag.* p. 311 (1877); *Reichen. J. f. O.* 1877, p. 12 (Loango Coast); *id. ibid.* pp. 231, 276; *Cab. J. f. O.* 1878, p. 245 (Kitui in Ukamba); *Fischer & Reichen. tom. cit.* p. 249 (Osi-Tana distr.; Kau; Wito); *id. J. f. O.* 1879, p. 339 (Ulimi); *Oustalet, Nouv. Arch. Mus.* (2) ii. *Bull.* p. 145 (1879); *Ayres, Ibis*, 1880, p. 268 (Transvaal); *Bocage, Orn. Angola*, p. 457 (1881: Humbe); *Shelley, P. Z. S.* 1881, p. 600 (Usambara Hills); *Sharpe in Oates's Matabele Land*, App. B. p. 327 (1881: Makalapsi R.); *Milne-Edwards & Grand-d. Hist. Nat. Madag., Ois.* p. 514, pls. ccviii.-ccx. (1882); *Salv. Cat. Strickl. Coll.* p. 522 (1882); *Holub & Pelz. Beitr. Orn. Südaf.* p. 277 cum tab. (1882); *Böhm, J. f. O.* 1882, p. 192 (Kakoma); *Shelley, Ibis*, 1882, p. 364 (Mashoona); *Butler, Feilden, & Reid, Zoologist*, 1882, p. 344 (Natal); *Beddard, P. Z. S.* 1884, pp. 544-553 (anatomy); *Sharpe, ed. Layard's B. S. Afr.* p. 725 (1884); *Johnston, River Congo*, p. 370 (1884); *Fischer, Zeitschr. ges. Orn.* i. p. 384 (1884: Great Aruscha); *Salvad. Ann. Mus. Genov.* (2) i. p. 229 (1884: Shoa); *Fischer, J. f. O.* 1885, p. 118 (Pangani; Aruscha; Naiwascha Lake); *Hartert, J. f. O.* 1886, p. 606 (Loko, R. Niger); *Reichen. J. f. O.* 1887, p. 48 (Victoria Nyanza, breeding); *Matschie, t. c.* p. 146 (Likulwe); *Reichen. t. c.* p. 299 (Manyanga); *Salvad. Ann. Mus. Genov.* (2) vi. p. 315 (1888: Shoa); *Büttik. Notes Leyd. Mus.* ix. p. 244 (1888: Humpata); *id. op. cit.* xi. p. 199 (1889: Upper Cunene River); *Gurney, Ibis*, 1890, p. 127 (Chagga, 4500 ft., Southern slope of Kilimanjaro); *Reichen. J. f. O.* 1890, p. 108 (Cameroons); *id. ibid.* 1891, p. 142 (Naingwira, Ugogo); *Emin, t. c.* p. 345 (Albert Nyanza); *Beddard, P. Z. S.* 1891, p. 18, fig. 4 b; *Sibree, Ibis*, 1891, p. 211 (Madagascar); *Rendall, Ibis*, 1892, p. 227 (Gambia); *Sharpe, t. c.* p. 342 (Machakos); *Newton, Dict. Birds*, ii. p. 405 (1895); *Reichen. Vög. deutsch-Ost-Afr.* p. 61, fig. 32 (1894); *Shelley, Ibis*, 1894, p. 477 (Fort Lister, Nyasa-land); *Fleck, J. f. O.* 1894, p. 387 (S.W. Africa); *Sharpe, P. Z. S.* 1895, p. 511 (Somali-land); *Scl. & Saunders, Ibis*, 1895, p. 500; *Sjöstedt, K. Sv. Vet.-Akad. Handl.* 27, no. 1, p. 32 (1895: Cameroons); *Shufeldt, Science Monthly*, xvi. p. 760 (1895); *Yerbury, Ibis*, 1896, p. 38 (Aden); *Shelley, t. c.* p. 176 (Nyasa-land); *id. B. Africa*, i. p. 159 (1896); *Woodward, Ibis*, 1897, p. 415 (Zulu-land); *Sharpe, t. c.* p. 517.

*Cephus scopus*, *Wagl. Syst. Av.* p. 74 (1827).  
*Ardea fusca*, *Forst. Descr. Anim.* p. 47 (1844).

**Adult male.** General colour above brown with a slight gloss of bronzy-purple, especially on the wings and tail; the primary-coverts and primaries bronzy-brown, with dusky-brown ends and reddish-brown shafts; head very strongly crested and brown in colour like the back, the long crest-feathers a little blacker; sides of face brown, streaked with ashy brown; under surface of body brown, with a slight appearance of ashy-brown streaks on the throat and fore-neck, the chin more ashy; tail light brown, barred with blackish or purplish brown, and having a broad band of purplish brown before the end of the tail, which is whity-brown; under wing-coverts and quill-lining brown, the latter with a purplish gloss; under tail-coverts light brown, with very distinct bars of darker brown: "bill horn-black; feet dingy black; iris umber-

brown\* (*Heuglin*). Total length 20 inches, culmen 3·5, wing 12·5, tail 6·7, tarsus 2·55.

*Adult female*. Similar to the male in colour. Total length 20 inches, culmen 3·05, wing 11·8, tail 6, tarsus 2·55.

*Hab.* The whole of Africa below the Sahara. Arabia. Madagascar.

|                   |                                                  |                                     |
|-------------------|--------------------------------------------------|-------------------------------------|
| a. Ad. sk.        | South Africa.                                    | J. E. Harting, Esq.<br>[P.]         |
| b. ♂ ad. sk.      | Ceres, Cape Colony (G. E. S.).                   | Shelley Coll.                       |
| c. ♂ ad. sk.      | Natal (T. Ayres).                                | Tweeddale Coll.                     |
| d, e. Ad. sk.     | Durban, Natal, April 14<br>(G. E. S.).           | Shelley Coll.                       |
| f. ♀ ad. sk.      | Pietermaritzberg, April 21.                      | Capt. Savile G. Reid<br>[C.]        |
| g. ♀ ad. sk.      | Orange Free State, June 8<br>(T. E. Buckley).    | Shelley Coll.                       |
| h. ♂ ad. sk.      | Potchefstroom, Transvaal,<br>June 3 (T. Ayres).  | Gurney Coll.                        |
| i. ♂ ad. sk.      | Shoshong, Matabele-land,<br>Aug. 7 (F. Oates).   | W. E. & C. G. Oates,<br>Esqrs. [P.] |
| k. ♀ ad. sk.      | Fort Lister, Nyasa-land,<br>July 2 (A. W. Hyle). | Sir H. H. Johnston<br>[P.]          |
| l. Ad. sk.        | Angola.                                          | Monteiro Coll.                      |
| m, n. ♀ ad. sk.   | Machakos, British East<br>Africa, Oct. 28.       | Dr. S. L. Hinde [P.]                |
| o. Ad. sk.        | Farafanyer, Somali-land.                         | J. Bonet Stanford,<br>Esq. [P.]     |
| p, q. ♂ ♀ ad. sk. | Angolala, Shoa, May (Sir W.<br>C. Harris).       | India Museum.                       |
| r. Ad. sk.        | Ain, Bogos-land, July 6 (W.<br>Jesse).           | Tweeddale Coll.                     |
| s. Ad. sk.        | Aden.                                            | Colonel Yerbury [P.]                |
| t. ♀ ad. sk.      | Mour ndava, E. Madagascar<br>(Van Dam).          | Leyden Museum.                      |



## Family IV. CICONIIDÆ.

### Key to the Sub-families.

- a. Bill straight along the line of the culmen, or only slightly decurved; the lower mandible having the gonys recurved, but never decurved ..... *CICONIINÆ*, p. 201.
- b. Bill smooth and decurved, the lower mandible following the curve of the upper one towards the tip ..... *TANTALINÆ*, p. 321.

### Sub-family CICONIINÆ.

#### Key to the Genera.

- a. Under tail-coverts stiffened and elongated so as to appear like rectrices, and often equalling or even much exceeding the latter in length.
  - a'. Black tail-feathers long, equalled by the white under tail-coverts, the two centre rectrices slightly shorter than the rest, causing a small fork; sides of face and upper throat bare. 1. *ANDRITA*, p. 202.
  - b'. Tail-feathers black, arranged in the form of a deeply cleft fork, and exceeded by the white under tail-coverts, which surpass most of the rectrices in length and appear as if they were true rectrices.
    - a''. Legs very short, the tarsus not twice the length of the middle toe and claw; sides of face and throat feathered..... 2. *MEGANA*, p. 204.
    - b''. Legs much longer, the tarsus more than twice the length of the middle toe and claw; lores and region of the eye bare, as also the sides of the upper throat; sides of face and centre of throat feathered..... 3. *KUXENTINA*, p. 207.
- b. Under tail-coverts ordinary, not stiffened and not exceeding the length of the tail-feathers.
  - a'. Culmen shorter than tarsus; bill not gaping towards the end, and the gonys nearly straight throughout... 4. *CICONIA*, p. 208.
  - b'. Culmen longer than tarsus; bill gaping widely towards the tip; edge

- of upper mandible furnished with lamellæ; the genys strongly curved upwards towards the end . . . . . 5. *ANASTOMUS*, p. 306.
- d'*. Culmen very long, equal to the tarsus which is also of great length; genys very strongly upcurved towards the tip.
- d''*. Head covered with metallic glossy plumes.
- a'*. Lores and region of eye feathered: no "saddle" on the bill . . . . . [p. 310.
- b'*. Lores and region of eye bare; a "saddle" across the bill . . . . . 6. *XENORHYNCHUS*, [p. 312.
- d''*. Head and neck bare, except for a few downy feathers on the occiput . . . . . 7. *EPHIPPIORHYNCHUS*,
- c*. Under tail-coverts composed of beautiful soft downy plumes; bill enormous; head and neck bare or with some fluffy down; from the chest a pendent pouch. 8. *MYCTERIA*, p. 314.
9. *LEPTOPTILUS*, p. 315.

1. *ABDIMIA*.

Type.

- Sphenorhynchus* (nec *Neuwied*, 1831), *Hempr. & Ehr.*  
*Symb. Phys.* fol. F (1832) . . . . . *A. abdimii*.  
*Abdimia*, *Bp. Consp. Av.* ii. p. 106 (1855) . . . . . *A. abdimii*.

*Range*. The greater part of Tropical Africa from Nubia south, but not occurring on the West Coast. Also in Southern Arabia. Said to have occurred in Spain.

1. *Abdimia abdimii*.

*Ciconia abdimii*, *Licht. Verz. Doubl.* p. 76 (1823: Nubia); *Cretzschm. in Rüpp. Atlas*, p. 11, tab. 8 (1826); *Wagl. Syst. Av.*, *Ciconia*, sp. 10, p. 142 (1827); *Less. Traité d'Orn.* p. 580 (1831); *Gray, List Grall. Brit. Mus.* p. 88 (1844; Abyssinia); *Des Murs in Lefebvre's Voy. Abyss.* p. 159 (1845: Senaar); *Rüpp. Syst. Uebers.* p. 122 (1845); *Gray, Gen. B.* iii. p. 561 (1848); *Brehm, J. f. O.* 1853, p. 102 (Sudan); *Vierth. Naumannia*, 1853, p. 21; *Brehm, J. f. O.* 1854, p. 81, 1855, p. 488, 1856, p. 404; *Vierth. Naumannia*, 1856, p. 75; *Hartl. Orn. W.-Afr.* p. 227 (1857: Senegambia); *Heugl. Ibis*, 1859, p. 346 (Dahalak & Tadjura, autumn); *id. J. f. O.* 1862, p. 402 (Kartum), 1863, p. 270 (Central Africa); *Schl. Mus. Pays-Bas, Ciconiæ*, p. 5 (1864); *Layard, B. S. Afr.* p. 315 (1867); *Chapm. Trav. S. Afr.*, App. p. 418 (1868: Lake Ngami); *Blanf. Geol. & Zool. Abyss.* p. 436 (1870: Annesley Bay); *Finach, Trans. Zool. Soc.* vii. p. 298 (1870: Undel Wells: Senafé; Bejook); *id. & Hartl. Vog. Ostaf.* p. 721 (1870); *Gray, Hand-l. B.* iii. p. 85, no. 10189 (1871); *Saunders, Ibis*, 1871, p. 393 (Spain); *Heugl. Orn. N.O.-Afr.* ii. p. 1104 (1873: breeding); *Antin. & Salvad. Viagg. Bogos*, p. 150 (1873: Keren); *Heugl. J. f. O.* 1874, p. 51 (Wadi Halfa); *Bocage, J. f. O.* 1876, pp. 301, 440 (Cunene R.); *Reichen. J. f. O.* 1877, pp. 169, 276; *Cab. J. f. O.* 1878, p. 245

(Ukamba); *Dresser, B. Eur.* vi. p. 295 (1880); *Bocage, Orn. Angola*, p. 451 (1881: Capangombe; Quillengues; Humbe); *Shelley, Ibis*, 1872, p. 364 (Mashona-land); *Sharpe, ed. Layard's B. S. Afr.* p. 730 (1884); *Böhm, J. f. O.* 1885, pp. 39, 52 (Kakoma); *Schalow, J. f. O.* 1886, p. 431 (Marungu); *Ayres, Ibis*, 1886, p. 297 (Transvaal); *Reichen. J. f. O.* 1887, p. 50 (Victoria Nyanza); *Matschie, t. c.* p. 146 (Marungu, Nov.); *Büttik. Notes Leyd. Mus.* x. p. 244 (1888: Kasinza R.); *id. op. cit.* xi. pp. 78, 99 (1889); *Reichen. Vög. deutsch-Ost-Afr.* p. 59 (1894: Igonda; Ukamba; Tanjanika; Victoria Nyanza); *Kuschel, J. f. O.* 1895, p. 91; *Shelley, B. Africa*, i. p. 159 (1896); *Yerbury, Ibis*, 1896, p. 38 (Aden, March).

*Sphenorhynchus abdimii*, *Hempr. & Ehr. Symb. Phys.* fol. F. tab. 5 (1832); *Reichenb. Grall.* tab. xciii. fig. 455 (1850); *Hartl. J. f. O.* 1854, p. 293 (W. Africa); *Heugl. Syst. Uebers.* p. 61 (1856); *id. Ibis*, 1861, p. 70 (Sennaar); *Antin. Cat. descr. Ucc.* p. 101 (1864: Dongola); *Gurney, Ibis*, 1868, p. 257; *id. in Anderss. B. Dam. Ld.* p. 280 (1872); *Heine & Reichen. Nomencl. Mus. Hein.* p. 312 (1890: Kartoum).

*Abdimia sphenorhyncha*, *Bp. Consp. Av.* ii. p. 106 (1855).

**Adult male.** General colour above black, slightly glossed with steel-green and purple, these colours being more distinct on the hind-neck; back, rump, and upper tail-coverts white; wing-coverts blackish, glossed with steel-green and purple, the lesser coverts almost entirely coppery purple; quills blackish, with metallic green on their inner face and slightly glossed above with green or purple; tail black, faintly glossed with purple on the outer web and with green on the inner one, the under surface being bronzy green; head, neck, and fore-neck metallic green and purple; the rest of the under surface, from the fore-neck downwards, white, including the axillaries and under tail-coverts; under wing-coverts blackish with a metallic green gloss: "bill horny green, the tip crimson; cheeks bright lead-colour; round the ears, in front of eyes, nostrils, and throat crimson; legs dull olive-green; feet and knees crimson; claws black" (*J. W. Yerbury*). Total length 30 inches, culmen 4.4, wing 17.5, tail 7.2, tarsus 4.8.

**Adult female.** Similar to the male: "iris light tawny brown; bill reddish at tip, greenish at base; bare skin round the eye and about the chin red; feet and front part of the tarsi, also the uncovered part of the tibiæ, dusky brown" (*T. Ayres*). Total length 24 inches, culmen 4.2, wing 17.4, tail 7, tarsus 4.7.

**Young.** Differs from the adult in wanting the lustre on the plumage, the head and neck being brown without any gloss: "bill reddish towards the tip, greenish towards the base; bare skin about the eye and chin red, in front of cere bluish; tarsi and feet dingy brick-red; iris light tawny brown" (*T. Ayres*).

**Hab.** The same as that of the genus.

a, b. Ad. st.

Abyssinia.

Dr. Rüppell [C.].

c. Ad. sk.

Abyssinia.

Shelley Coll.

d. Ad. sk.

Massowa.

Capt. Wharton [P.].

e. ♂ ad. sk.

Senafé, Abyssinia, May 8  
(*W. Jesse*).

Tweeddale Coll.

|                                    |                                |                      |
|------------------------------------|--------------------------------|----------------------|
| ♂ Ad. sk.                          | Kaba, Bapa-lani (2000 feet),   | W. T. Hamilton, Esq. |
|                                    | Aug. 2                         | C.                   |
| ♀ Ad. sk.                          | Lahor, India, March 25.        | Colonel Yachey, P.   |
| ♂ Ad. sk.                          | Kacimadu, Berbera East Africa, | Dr. W. I. Anson      |
|                                    | Jan. 4                         | C.                   |
| 1 ♀ ad. sk.                        | Banda, Camero. River, April    | Shelby Coll.         |
|                                    | (Archibut)                     |                      |
| ♂ ♀ ad. sk.                        | Pantherpura, Kaimosi, Jan. 5   | Gentry Coll.         |
|                                    | (T. Ayer)                      |                      |
| 1 Ad. sk.                          | King's Mountain,               | Major Ingram, P.     |
| 11 ♀ ad. sk.                       | South Africa                   | Yverdon Coll.        |
| 1. <i>Ciconia</i> & <i>Abuissa</i> |                                | W. T. Hamilton, Esq. |
| partial plum.                      |                                | C.                   |

2. *MECURA*.

Type.

*Mecura*, Col. Turk. Gen. Nat. Franch, Berlin.From *Beate-Amyra*, Berbera: 1 Sept. 1830.p. 1464 (note *Zenaidura*).*Diplocrocyx*, Blyth (note?), note *Jerd. B. Ind.* ii. p. 75 (1864).*D. episcopus*.

*Range.* The whole of the Ethiopian Region, Indian Peninsula and Ceylon to the Burmese countries and Cochin China, and south to the Indo-Malayan Islands and Celebes.

1. *Ciconia episcopus*.*Heron de la Côte de Coromandel, H. Ant. Pl. Bul. viii. pl. 906.**Le Heron Violet, Buff. Hist. Nat. Ois. vi. p. 370 (1780: Coromandel Coast).**Ardea episcopus, Bodd. Tabl. Pl. Enl. p. 54 (1783).**Violet Heron, Lath. Gen. Syn. iii. pt. 1, p. 97 (1785: Coromandel Coast).**Ardea leucocephala, Gm. Syst. Nat. i. p. 642 (1788: Coromandel Coast).*

*Ciconia leucocephala, Horef. Trans. Linn. Soc. xiii. p. 188 (1821); Sykes, P. Z. S. 1832, p. 159 (Deccan); Gray, Cat. Mamm. &c. Nepal pres. Hodgs. p. 135 (1846: Nepal); Blyth, Cat. B. Mus. As. Soc. p. 277 (1849: Calcutta); Layard, Ann. & Mag. Nat. Hist. xiv. p. 114 (1854); Licht. Nomencl. Av. Mus. Berol. p. 90 (1854); Burgess, P. Z. S. 1855, p. 72 (Deccan); Hengst. Syst. Uelers. p. 60 (1856); Hartl. Orn. W.-Afr. p. 227 (1857); Adams, P. Z. S. 1858, p. 508 (Poona); Gurney, Ibis, 1859, p. 248 (Natal); Cass. Proc. Acad. Nat. Sci. Philad. 1859, p. 173 (Camma R.); Hartl. J. f. O. 1861, p. 270; Irby, Ibis, 1861, p. 244 (Oudh); Antin. Cat. descr. Ois. p. 101 (1864); Jerd. B. Ind. iii. p. 737 (1864); Schl. Mus. Pays-Bas, Ciconiæ, p. 9 (1864); Layard, B. S. Afr. p. 315 (1867); Beavan, Ibis, 1868, p. 397 (Manbhum); Murray, Vertebr. Faun. Sind, p. 267 (1884); Seebohm, Ibis, 1889, p. 100; Jesse, Ibis, 1897, p. 561 (Lucknow, July, breeding).*

*Ciconia umbellata, Wagl. Syst. Av., Ciconia, sp. 11, p. 140 (1827); Less. Traité d'Orn. p. 580 (1831).**Ciconia leucocephala vel biclavata, Hodgs. Icon. ined. in Brit. Mus., Grall. pls. 69-71; id. in Gray's Zool. Misc. p. 86 (1844).**Ciconia bicaudata, Tickell, J. A. S. Beng. xvii. p. 304 (1848).**Ciconia episcopus, Gray, Gen. B. iii. p. 561 (1848); id. Hand-l. B.*

- iii. p. 85, no. 10187 (1871); *Holden. P. Z. S.* 1872, p. 477 (Ceylon); *Heugl. Orn. N.O.-Afr.* ii. p. 1108 (1873); *Antin. & Salvad. Viagg. Bogos*, p. 151 (1873: Anseba, June); *Legge, Ibis*, 1874, p. 30, 1875, p. 403 (Ceylon); *Blyth, B. Burm.* p. 158 (1875); *Wardlaw-Ramsay, Ibis*, 1877, p. 470 (Tonghoo); *Fairb. Str. F.* v. p. 263 (1877: Deccan); *Reichen. J. f. O.* 1877, p. 12 (Loango Coast); *id. t. c.* p. 168; *Sharpe & Bouvier. Bull. Soc. Zool. France*, iii. p. 78 (1878); *Cab. J. f. O.* 1878, p. 249 (Zanzibar); *Bucage, Orn. Angola*, p. 452 (1881: Quillengues; Huilla); *W. A. Forbes, Ibis*, 1883, pp. 510, 533 (Niger distr.); *Sharpe, ed. Layard's B. S. Afr.* p. 731 (1884); *Büttik. Notes Leyd. Mus.* vii. p. 242 (1885: Liberia); *Fischer, J. f. O.* 1885, p. 118 (Bagamoyo; Kipini; Lamu Coast); *Wardlaw-Ramsay, Ibis*, 1886, p. 161 (Luzon); *Schalow, J. f. O.* 1886, p. 428 (Lualaba); *Matschie, J. f. O.* 1887, p. 146 (Lufua R.); *Büttik. Notes Leyd. Mus.* x. p. 101 (1888: Liberia); *id. op. cit.* xi. p. 78 (1889: Cunene R.); *id. t. c.* p. 136; *Sharpe, Ibis*, 1892, p. 542 (Lake Naiwasha); *Shelley, B. Afr.* i. p. 159 (1896).
- Ciconia microscelis*, *Gray, Gen. B.* iii. p. 561, pl. 151 (1848); *Reichenb. Grall.* tab. 292. fig. 2388 (1850); *Gray, Hand-l. B.* iii. p. 35, no. 10188 (1871).
- Sphenorhynchus umbellata*, *Reichenb. Grall.* tab. 93. fig. 456 (1850).
- Dissoura leucocephala*, *Cab. Verh. Ges. Naturf. Freunde, Berlin, Preuss. Staats-Anzeiger*, Beilage i. Sept. 1850, p. 1484 (*teste Reichen. J. f. O.* 1877, p. 168); *id. in Von der Decken's Reis.* iii. p. 48 (1869).
- Melanopelargus leucocephalus*, *Bp. Consp. Av.* ii. p. 105 (1855).
- Ciconia pruyssenaerii*, *Heugl. J. f. O.* 1863, p. 29; *id. J. f. O.* 1864, p. 275; *id. Ibis*, 1864, p. 430 (Rej-Negro Land, Jan. to May).
- Diplocercus leucocephala*, *Blyth; teste Jerd. B. Ind.* iii. p. 737 (1864).
- Melanopelargus episcopus*, *Blyth, Ibis*, 1867, p. 172; *Walden, Trans. Zool. Soc.* viii. p. 101 (1872: Celebes); *Hume & Henders. Lahore to Yarkand*, p. 294 (1873); *Hume, Nests and Eggs Ind. B.* p. 609 (1873); *Adam, Str. F.* i. p. 389 (1873: Sambhur); *Ball, Str. F.* ii. p. 433 (1874: Chota Nagpur); *Hume, t. c.* p. 483 (Tenasserim); *Salvad. Ucc. Born.* p. 356 (1874); *Hume, Str. F.* iii. p. 189 (1875); *id. t. c.* p. 235 (Tenasserim); *Tweed. P. Z. S.* 1878, p. 344 (Amparo, July & Sept.); *id. t. c.* p. 593 (Zamboanga, March); *Hume & Davison, Str. F.* vi. p. 469 (1878); *Davidson & Wenden, Str. F.* vii. p. 90 (1878); *Everett, Journ. Straits Branch Asiat. Soc.* 1889, p. 191 (Borneo); *Bourns & Worcester, Occ. Papers Minnes. Acad.* i. p. 32 (1894: Masbate; Panay; Mindoro).
- Dissura episcopa*, *Hume, Str. F.* viii. pp. 71, 114, 151, 161 (1879: Malay Peninsula); *Scully, t. c.* p. 359 (Nepal Valley); *Butler, t. c.* p. 387 (Sind); *Rainey, t. c.* p. 417; *Legge, B. Ceylon*, p. 1119 (1880); *Vidal, Str. F.* ix. p. 88 (1880: S. Konkan); *Butler, t. c.* p. 433 (1881); *Reid, Str. F.* x. p. 74 (1881: Lucknow); *Oates, t. c.* p. 243 (Upper Pegu); *Davidson, t. c.* p. 323 (1882: W. Khandeish); *Davison, t. c.* p. 416 (Wynaad); *Swinhoe & Barnes, Ibis*, 1885, p. 135 (Central India); *Macgregor, Str. F.* x. p. 441 (1887: Deccan); *Hume, Str. F.* xi. p. 331 (1888: Sylhet & Cachar).
- Dissura episcopus*, *Butler, Cat. B. Sind etc.* p. 68 (1879); *id. Cat. B. S. Bomb. Pres.* p. 81 (1880); *Oates, Handb. B. Brit. Burm.* ii. p. 265 (1883); *Johnston, River Congo*, p. 370 (1884); *Oates, Ibis*, 1888, p. 73 (Bhamo); *id. ed. Hume's Nests & Eggs*

*Ind. B.* iii. p. 268 (1890); *Munn, Ibis*, 1894, p. 71 (Calcutta distr., April).

*Disoura episcopus*, *Feichen. Vög. deutsch-Ost-Afr.* p. 59 (1894: Bagomoyo; Kingani).

*Adult male.* General colour above black, glossed with metallic green and purple, more especially on the hind-neck; the entire back glossed with metallic green as well as the upper tail-coverts; tail-feathers black, not to be confounded with the under tail-coverts, which are white; the outer rectrices black, graduated, and forming a fork; wing-coverts like the back, but more distinctly glossed, especially on the lesser series, which are metallic purplish red; quills black, glossed with slaty externally and with metallic green on the inner face of all the quills; crown of head blue-black as far as the occiput; nape and entire neck white as well as the throat, the chin less thickly clothed with feathers; breast black, slightly glossed with metallic green, but more strongly with reddish purple, especially on the fore-neck and chest; abdomen and under tail-coverts white, the long ones stiffened and resembling tail-feathers; axillaries and under wing-coverts black with a gloss of metallic green: "bill in general black, tinged with red on the culmen, the tips, and the margins; legs and toes red; claws reddish horn-colour; iris crimson; eyelids and facial skin plumbeous" (*E. W. Oates*). Total length about 36 inches, culmen 6.5, wing 20, tail 7.2, tarsus 7.

*Adult female.* Similar to the male; "iris very pale, almost whitish, hue" (*H. J. Rainey*). Total length 34 inches, culmen 5.7, wing 18.5, tail 7.2, tarsus 6.2.

*Young birds* differ from the adults in being much browner and not having so much gloss, the black feathers on the head being replaced by bronzy brown, the purplish gloss on the wing-coverts almost absent, and the purple gloss on the breast being replaced by dull bronzy brown. The forehead generally shows a basal line of white feathers, but these are also apparent in some of the old birds, and are apparently shed by them in course of time.

*Hab.* The same as that of the genus.

|               |                                                     |                    |
|---------------|-----------------------------------------------------|--------------------|
| a. Ad. st.    | Cape Colony.                                        | Sir A. Smith [C.]  |
| b. Ad. st.    | Cape Colony.                                        | Lord Derby [P.]    |
| c. ♀ ad. sk.  | Huilla, Benguela, March ( <i>An-chieta</i> ).       | Shelley Coll.      |
| d. ♀ ad. sk.  | Sambhur, March 29 ( <i>R. M. Adam</i> ).            | Hume Coll.         |
| e. ♀ ad. sk.  | Kherla, Gurgaon, June 8 ( <i>C. T. Bingham</i> ).   | Hume Coll.         |
| f. Ad. sk.    | Kurnal, Feb.                                        | Hume Coll.         |
| g. Ad. sk.    | Etawah.                                             | Hume Coll.         |
| h-k. Ad. sk.  | Oudh.                                               | Pinwill Coll.      |
| l. Ad. sk.    | Oudh, Feb.                                          | Hume Coll.         |
| m-s. Ad. sk.  | Nepal.                                              | Hodgson Coll.      |
| t, u. Ad. sk. | Nepal ( <i>B. H. Hodgson</i> ).                     | India Museum.      |
| v. ♀ ad. sk.  | Manoura, Nepal Valley, July 10.                     | Dr. J. Scully [C.] |
| w. ♂ ad. sk.  | Balaji, Nepal Valley, July 19 ( <i>J. Scully</i> ). | Hume Coll.         |

|                          |                                                             |                              |
|--------------------------|-------------------------------------------------------------|------------------------------|
| <i>x.</i> Ad. sk.        | Bhotan Doars, Feb. ( <i>L. Maudelli</i> ).                  | Hume Coll.                   |
| <i>y, z.</i> ♂ ♀ ad. sk. | Raipur District, Jan.                                       | Hume Coll.                   |
| <i>a.</i> ♀ ad. sk.      | Wadale, Ahmednuggur, Nov. 27<br>( <i>S. B. Fairbank</i> ).  | Tweeddale Coll.              |
| <i>b.</i> ♂ ad. sk.      | Ceylon, July 14.                                            | Colonel W. V. Legge<br>[P.]. |
| <i>c.</i> ♀ ad. sk.      | Ceylon, Dec. 17.                                            | Tweeddale Coll.              |
| <i>d.</i> ♂ ad. sk.      | Boulay, Thayetmyo, Burma,<br>Nov. 25 ( <i>E. W. O.</i> ).   | Oates Coll.                  |
| <i>e.</i> ♂ ad. sk.      | Tonghoo, Dec. ( <i>R. G. W. R.</i> ).                       | Tweeddale Coll.              |
| <i>f.</i> ♂ ad. sk.      | Thatone, Tenasserim, Dec. 5<br>( <i>W. Davison</i> ).       | Hume Coll.                   |
| <i>g.</i> ♀ ad. sk.      | Bankasoon, March 15 ( <i>W. Davison</i> ).                  | Hume Coll.                   |
| <i>h.</i> ♂ ad. sk.      | Salang, Island of Tonka, March<br>25 ( <i>J. Darling</i> ). | Hume Coll.                   |
| <i>i, k.</i> Ad. sk.     | Penang ( <i>Dr. Cantor</i> ).                               | India Museum.                |
| <i>l.</i> Ad. sk.        | Cochin China, Dec.                                          | M. E. St. Pierre [P.].       |
| <i>m.</i> Ad. sk.        | E. Java.                                                    | Wallace Coll.                |
| <i>n.</i> Ad. sk.        | Iabuan.                                                     | Sir Hugh Low [P.].           |
| <i>o.</i> Ad. sk.        | Manila, Luzon ( <i>Maitland Heriot</i> ).                   | Tweeddale Coll.              |
| <i>p.</i> ♂ ad. sk.      | Amparo, S. Leyte, July ( <i>A. H. Everett</i> ).            | Tweeddale Coll.              |
| <i>q, r.</i> ♂ ♀ ad. sk. | Bohol, March 20.                                            | Steere Coll.                 |
| <i>s.</i> ♀ ad. sk.      | Zamboanga, Mindanao, March<br>( <i>A. H. Everett</i> ).     | Tweeddale Coll.              |
| <i>t.</i> Skeleton.      | N.E. Africa.                                                | Purchased.                   |
| <i>u.</i> Skeleton.      | Nepal.                                                      | Hodgson Coll.                |
| <i>v.</i> Skeleton.      | Java.                                                       | Purchased.                   |

## 3. EUXENURA.

Type.

*Euxenura*, *Ridgw. Bull. U.S. Geol. Surv.* iv. p. 249  
(1878) ..... *E. maguari*.

*Range.* Confined to South America.

1. *Euxenura maguari*.

La Cigogne d'Amérique, *Briss. Orn.* v. p. 369 (1760).  
 Le Maguari, *Buff. Hist. Nat. Ois.* vii. p. 275 (1780).  
 American Stork, *Lath. Gen. Syn.* iii. pt. 1, p. 50 (1785: Brazil).  
*Ardea maguari*, *Gm. Syst. Nat.* i. p. 623 (1788); *Lath. Ind. Orn.* ii.  
 p. 677 (1790).  
*Tantalus pillus*, *Molina, Saggio St. Chili*, p. 323 (1789).  
*Baguari*, *Azara, Apunt.* iii. p. 114 (1805).  
*Ciconia maguari*, *Temm. Man. d'Orn.* ii. p. 563 (1820); *Wagler*,  
*Syst. Av.*, *Ciconia*, sp. 7, p. 138 (1827); *Neuwied, Beitr. Naturg.*  
*Bras.* iv. p. 677 (1832); *Vieill. Gal. Ois.* p. 138, pl. 254 (1834);  
*Gould, B. Eur.* iv. pl. 285 (1837); *Hartl. Ind. Azura*, p. 22  
 (1847); *Gay, Faun. Chili, Zool.* i. p. 415 (1847); *Cab. in Schomb.*  
*Reis. Guian.* iii. p. 752 (1848); *Licht. Nomencl. Av. Mus. Berol.*  
 p. 90 (1850: Montevideo); *Bp. Consp. Av.* ii. p. 104 (1855);  
*Burm. Th. Bras.* iii. p. 419 (1856); *id. Reise La Plata-St.* ii. p. 509  
 (1861: Tucuman); *Schl. Mus. Pays-Bas, Ciconiæ*, p. 8 (1864:



S. America); *Palz. Orn. Bras.* p. 304 (1871: Irisanga; Caiçara; Matto Grosso; Forte do Rio Branco); *Gray, Hand-l. B.* iii. p. 35, no. 10185 (1871); *Scl. & Salv. Nomencl. Av. Neutr.* p. 126 (1873); *Durnf. Ibis*, 1876, p. 162 (Buenos Ayres); *id. Ibis*, 1877, p. 189, 1878, p. 390 (Chupat Valley, Oct.; mouth of Sengel, Nov.); *Scl. P. Z. S.* 1878, p. 633; *Gibson, Ibis*, 1879, p. 415 (Cape San Antonio, breeding); *id. Ibis*, 1880, p. 153; *Barrows, Auk*, i. p. 271 (1884: Entreños); *Gibson, Ibis*, 1885, p. 282 (Uruguay); *Salvin, Ibis*, 1886, p. 171 (British Guiana); *Oust. Miss Sci. Cap Horn, Oia.* pp. 299, 330 (1891).

*Ciconia jaburu*, *Spix, Av. Bras.* ii. p. 71, pl. lxxix. (1825).

*Ciconia pillus*, *Fraser, P. Z. S.* 1848, p. 116 (Colchagua, Chili); *Gray, Gen. B.* iii. p. 561 (1848).

*Ciconia dicrura*, *Reichen. J. f. O.* 1877, p. 169.

*Euxenura maguari*, *Ridgw. Bull. U.S. Geol. Surv.* iv. p. 249 (1878); *Beard, Brewer, & Ridgw. Water-Birds N. Amer.* i. p. 77 (1884); *Scl. & Huds. Argent. Orn.* ii. p. 106 (1889); *James, New List Chilean B.* p. 8 (1892); *Graham Kerr, Ibis*, 1892, p. 145 (Pilcomayo); *Holland, t. c.* p. 205 (Argentine Republic, breeding in October); *Reed, Ibis*, 1893, p. 596 (Chili); *Aplin, Ibis*, 1894, p. 190 (Uruguay); *Graham Kerr, Bull. Brit. Orn. Club*, vi. p. ix (1896: Paraguay).

**Adult.** General colour above white, including the whole of the wing-coverts except the greater series, which with the scapulars, bastard-wing, primary-coverts, quills, and tail-feathers are black glossed with bronzy green and purplish; the tail forked and exceeded in the middle by the long under tail-coverts, which are stiffened and take the form of rectrices; head and neck all round and underparts white, including the under wing-coverts and axillaries; the feathers over the crop lengthened and with the webs dissociated: "legs and feet blood-red; bill lead-grey" (*O. V. Aplin*); "iris pale yellow" (*T. Bridges*). Total length about 45 inches, culmen 8.2, wing 21.5, tail 9, tarsus 9.1.

**Immature?** The specimen from Chili (*Bridges*) agrees with the one from British Guiana, but the other Chilean bird has blackish under wing-coverts and the marginal wing-coverts also black. Although the specimen appears to be adult, I fancy the above must be the remains of immature plumage. Total length 37 inches, culmen 8.3, wing 21.8, tail 8.6, tarsus 9.6.

**Hab.** From British Guiana to Brazil and Chili.

|              |                              |                         |
|--------------|------------------------------|-------------------------|
| a. Ad. sk.   | British Guiana.              | Sir R. Schomburgk [C.]. |
| b. Ad. sk.   | Colchagua, Chili.            | T. Bridges, Esq. [C.].  |
| c. Imm. sk.  | Chili ( <i>Weisshaupt</i> ). | Salvin-Godman Coll.     |
| d. Skeleton. | Chili.                       | Purchased.              |

#### 4. CICONIA.

|                                                                           |                     |
|---------------------------------------------------------------------------|---------------------|
| <i>Ciconia</i> , <i>Briss. Orn.</i> v. p. 361 (1760) .....                | Type.               |
| <i>Melanopelargus</i> , <i>Reichenb. Av. Syst. Nat.</i> p. xvi (1852-53). | <i>C. ciconia</i> . |
|                                                                           | <i>C. nigra</i> .   |

**Range.** The Palearctic, Ethiopian, and Indian Regions, but not reaching to the Australian Region.

*Key to the Species.*

- a.** Under surface of body and tail white, like the head and neck and back.
- a'.** Smaller: bill red ..... *ciconia*, p. 299.
- b'.** Larger: bill black ..... *boyciana*, p. 302.
- Δ.** Breast and abdomen white; tail black with bronzy, greenish, or purple reflections, like the head and neck and entire upper parts ..... *nigra*, p. 303.

1. *Ciconia ciconia*.

The Common or White Stork, *Albin*, *Nat. Hist. B.* ii. p. 59, pl. 64 (1798).

La Cigogne blanche, *Briss. Orn.* v. p. 365, pl. 32 (1760); *D'Aubent. Pl. Enl.* viii. pl. 866.

*Ardea ciconia*, *Linn. Syst. Nat.* i. p. 235 (1766); *Gm. Syst. Nat.* i. p. 622 (1788); *Lath. Ind. Orn.* ii. p. 676 (1790); *Chapm. Trav. S. Afr.* ii. App. p. 418 (1868).

La Cigogne, *Buff. Hist. Nat. Ois.* vii. p. 253, pl. xii. (1780).

White Stork, *Lath. Gen. Syn.* iii. pt. 1, p. 47 (1785).

*Ciconia alba*, *Bechst. Naturg. Deutschl.* iv. p. 82 (1793); *Pallas, Zoogr. Rosso-Asiat.* ii. p. 113 (1811); *Vieill. N. Dict. d'Hist. Nat.* vii. p. 106 (1817); *Temm. Man. d'Orn.* ii. p. 560 (1820); *Wagl. Syst., Av. Ciconia*, sp. 8, p. 139 (1827); *Werner, Atlas, Coureurs*, pl. 20 (1827); *Fleming, Brit. Anim.* p. 97 (1828); *Roux, Orn. Prov.* pl. 324 (1830); *Less. Traité d'Orn.* p. 580 (1831); *Ménétr. Cat. Rais. Cauc.* p. 50 (1832); *Jenyns, Man. Brit. Vertehr.* p. 194 (1835); *Strickl. P. Z. S.* 1836, p. 101 (Smyrna); *Gould, B. Eur.* iv. pl. 283 (1837); *Naum. Vög. Deutschl.* ix. p. 231 (1838); *Bp. Comp. List B. Eur. & N. Amer.* p. 46 (1838); *Cresp. Orn. Gard.* p. 376 (1840); *Keys. & Blas. Wirb. Eur.* pp. lxxxi, 221 (1840); *Nordm. in Démid. Voy. Russ. Mérid.* iii. p. 264 (1840); *Webb & Berth. Orn. Canar.* p. 36 (1841); *Selys-Longch. Faun. Belge*, p. 131 (1842); *Gray, List Grall. Brit. Mus.* p. 88 (1844); *Mühle, Orn. Griechenl.* p. 117 (1844); *Schl. Rev. Crit.* p. xcix (1844); *Rüpp. Syst. Uebers.* p. 121 (1845: Egypt, March, Aug.); *Hewits. Eggs Brit. B.* ii. p. 279, pl. lxxvii. fig. 1 (1846); *Reichenb. Grall.* tab. xciii. figs. 449-50 (1848); *Gray, Gen. B.* iii. p. 561 (1848); *Blyth, Cat. B. Mus. As. Soc.* p. 276 (1849: Calcutta); *Thomps. B. Irel.* ii. p. 175 (1850); *Strickl. P. Z. S.* 1850, p. 221 (Kordofan); *Kjærb. Danm. Fugle*, pl. xxxii. fig. 6 (1851); *Macgill. Brit. B.* iv. p. 481 (1852); *Schl. Vog. Nederl.* pl. 199 (1854); *Licht. Nomencl. Av. Mus. Berol.* p. 90 (1854: Senegal); *Bp. Consp. Av.* ii. p. 104 (1855); *Heugl. Syst. Uebers.* p. 60 (1856); *Hartl. Orn. W.-Afr.* p. 266 (1857); *Sundev. Sv. Fogl.* pl. 47. fig. 1 (1858); *Jaub. & Barth.-Lapomm. Rich. Orn.* p. 353 (1859); *Tristr. Ibis*, 1859, p. 36 (Jerusalem); *Taylor, t. c.* p. 51 (Egypt); *Salvin, t. c.* p. 359 (Tunis); *Linderm. Vög. Griechenl.* p. 154 (1860); *Tristr. Ibis*, 1860, p. 76 (Sahara); *Gurney, t. c.* p. 220 (Natal); *Pourys, t. c.* p. 347 (Epirus, March); *Schl. Dier. Nederl. Vogels*, pl. 20. figs. 3, 3\* (1861); *Irby, Ibis*, 1861, p. 244 (Oudh); *Simpson, t. c.* p. 371 (Dobrudscha, breeding); *Hartl. J. f. O.* 1861, p. 270; *Gray, List Brit. B.* p. 151 (1863); *Schl. Mus. Pays-Bas, Ciconiæ*, p. 2 (1864); *Nordm. J. f. O.* 1864, p. 376 (S. Sweden); *Jerd. B. Ind.* iii. p. 736 (1864); *Adams, Ibis*, 1864, p. 30 (Egypt and Nubia); *Wright, t. c.* p. 144 (Malta,

occasional); *Filippi, Viagg. Persia*, p. 351 (1865); *Giglioli, Ibis*, 1865, p. 60 (Pisa, not observed); *Lilford, Ibis*, 1866, p. 386 (Spain); *Layard, B. S. Afr.* p. 314 (1867); *Kawall, Bull. Soc. Imp. Nat. Mosc* 1867, pp. 186-197; *Degl. et Gerbe, Orn. Eur.* ii. p. 316 (1867); *Taylor, Ibis*, 1867, p. 70 (Egypt); *Drake, t. c.* p. 430 (Tangiers); *Loche, Expt. Sci. Algér.*, Ois. ii. p. 124 (1867); *Gurney, Ibis*, 1868, p. 254 (S. Africa); *Tristr. t. c.* p. 326 (Palestine); *Smith, t. c.* p. 454 (Portugal); *Borggr. Vogelf. Norddeutschl.* p. 124 (1869); *Doderl. Avif. Sicil.* p. 218 (1869); *Saunders, Ibis*, 1869, p. 174 (Seville); *Droste, Vogelw. Borkum*, p. 255 (1869); *Wyatt, Ibis*, 1870, p. 18 (Sinai); *Elwes & Buckley, t. c.* p. 334 (Turkey); *Fritsch, Vog. Eur.* tab. 41. fig. 3 (1870); *Finckh & Hartl, Vog. Ostafri.* p. 720 (1870); *Gray, Hand-l. B.* iii. p. 35, no. 10184 (1871); *Gurney, Ibis*, 1871, p. 207 (Algeria); *Saunders, t. c.* p. 392 (Spain); *Salvad. Faun. Ital.*, Ucc. p. 245 (1871); *Gould, B. Gt. Brit.* iv. pl. 30 (1871); *R. Gray, B. West Scotl.* p. 284 (1871); *G. C. Taylor, Ibis*, 1872, p. 232 (near Constantinople); *Harting, Handb. Brit. B.* p. 54 (1872); *Gurney, in Andersen, B. Dam. Ld.* p. 280 (1872); *Shelley, B. Egypt*, p. 265 (1872); *Heugl. Orn. N.O.-Afr.* ii. pt. 1, p. 1100 (1873); *Brkose, Ibis*, 1873, p. 341 (Sardinia, accidental); *Dresser, B. Eur.* vi. p. 297, pl. 405 (1873); *Hume, Str. F.* i. p. 252 (1873: Upper Sind); *Palmén, Finl. Fagl.* p. 284 (1873); *Ball, Str. F.* ii. p. 433 (1874: Maabhum); *Ayres, Ibis*, 1874, p. 104 (Transvaal); *Buckley, t. c.* p. 389 (Limpopo R.); *Durnf. t. c.* p. 397 (N. Frisian Isl.); *Irby, Orn. Str. Gibr.* p. 188 (1875); *Danford & Harvie Brown, Ibis*, 1875, p. 425 (Transylvania); *Fallon, Ois. Belg.* p. 157 (1875); *Blunf. East. Persia*, ii. p. 297 (1876); *Butler, Str. F.* iv. p. 22 (1876: Mount Aboo distr.); *Scully, t. c.* p. 194 (E. Turkestan); *Fairbank, t. c.* p. 263 (Deccan); *Reichen. J. f. O.* 1877, p. 170; *Butler, Str. F.* v. p. 233 (1877: Deesa, Sept. to March); *Tucz. Bull. Soc. Zool. France*, ii. p. 159 (1877: Poland); *Danf. Ibis*, 1878, p. 34 (Asia Minor, March); *Davidson & Wenden, Str. F.* vii. p. 90 (1878: Deccan); *Ball, t. c.* p. 230 (Ganges to Godavery); *Cripps, t. c.* p. 306 (Faridpur); *Hume, Str. F.* viii. p. 114 (1879); *Butler, Cat. B. Sind etc.* p. 68 (1879: winter); *id. Cat. B. S. Bomb. Pres.* p. 81 (1880: cold weather visitant); *Sharpe in Oates's Matubele Land*, App. B, p. 327 (1881: Ramaquehan R., Nov.); *Butler, Str. F.* ix. p. 433 (1881: Deccan); *Parker, t. c.* p. 485 (Ceylon); *Holub & Pelz. Beitr. Orn. Sudafr.* p. 286 (1882); *Salvin, Cat. Strickl. Coll.* p. 286 (1882: Smyrna); *Dixon, Ibis*, 1882, p. 578 (Constantine); *B. O. U. List Brit. B.* p. 112 (1883); *Seebohm, Ibis*, 1883, p. 32 (Caucasus); *Irby, t. c.* p. 188 (Santander); *Lilford, t. c.* p. 234 (Seville); *Giglioli, Iconogr. Avif. Ital.* no. 332 (1883); *Saunders, ed. Yarrell's Brit. B.* iv. p. 219 (1884); *Clarke, Ibis*, 1884, p. 146 (Slavonia); *Saunders, t. c.* p. 385 (Pyrenees); *Seebohm, Hist. Brit. B.* ii. p. 525 (1884); *Sharpe, ed. Layard's B. S. Afr.* p. 728 (1884); *Nelson, Zool.* 1884, p. 489 (Pevensay); *Tristr. Faun. & Flor. Palest.* p. 111 (1884: migrant); *Bogd. Conspect. Av. Imp. Ross.* p. 117 (1884); *Radde, Orn. Cauc.* pp. 42, 395 (1884: Tiflis, 6000 ft., breeding); *Johnston, River Congo*, p. 370 (1884); *Murray, Vertebr. Faun. Sind*, p. 267 (1884); *Whitehead, Ibis*, 1885, p. 44 (Corsica); *Reid, t. c.* p. 250 (Marocco); *Booth, Rough Notes*, ii. (1886); *Salvad. Elenco Ucc. Ital.* p. 247 (1886); *Gigl. Avif. Ital.* p. 280 (1886); *Seebohm, Ibis*, 1887, p. 345 (Natal); *Tait, t. c.* p. 374 (Portugal); *Hume, Str. F.* xi. p. 331 (1888: Manipur);

- Irby, Key List Brit. B.* p. 33 (1888); *Harvie-Brown & Buckley, Vert. Faun. Outer Hebr.* p. 96 (1888); *Reichen. Syst. Verz. Vög. Deutschl.* p. 42 (1889); *St. John, Ibis*, 1889, p. 178 (Candahar); *Lilford, t. c.* p. 344 (Cyprus); *Saunders, Man. Brit. B.* p. 375 (1889); *Gigl. Avif. Ital., 1st Resoc.* p. 446 (1889); *id. 2nd Resoc.* p. 648 (1890); *id. 3rd Resoc.* p. 509 (1891); *Koenig, J. f. O.* 1890, p. 313 (Madeira); *Gätke, Vogelw. Helgol.* p. 466 (1891); *Madarász, Erläut. Ausst. Ungar. Vogelf.* p. 106 (1891); *W. Evans, Ibis*, 1891, p. 70 (Incubation); *Sharpe, t. c.* p. 112 (Fao); *Reiser, Vögel Landesm. Sarajero*, p. 106 (1891); *Frivaldsky, Av. Hung.* p. 134 (1891); *Harvie Brown & Buckley, Vertebr. Faun. Argyll & Inner Hebr.* p. 119 (1892); *Seebohm, Ibis*, 1892, p. 21 (Heligoland); *Macph. Vertebr. Faun. Lakel.* p. 230 (1892); *Lilford, Col. Fig. Brit. B.* part xxiii. (1893); *Meade-Waldo, Ibis*, 1893, p. 199 (Canary Is.); *Munn, Ibis*, 1894, p. 71 (Calcutta distr., Jan.); *Chapman, t. c.* p. 345 (West Jutland); *Irby, Orn. Str. Gibr.* 2nd ed. p. 207 (1895); *Gätke, Heligol.* (Engl. ed.) p. 452 (1895); *Munn, Ibis*, 1897, p. 58 (Tangier & Tetuan, May); *Saunders, t. c.* p. 87 (Pyrenees); *Koenig, J. f. O.* 1897, pp. 195, 197 (Algeria); *Floericke, t. c.* p. 402 (Kurische Nehrung).
- Ciconia albescens*, *Brehm, Vögel Deutschl.* p. 574 (1831).
- Ciconia nivea*, *Brehm, tom. cit.* p. 574.
- Ciconia candida*, *Brehm, tom. cit.* p. 575.
- Ciconia major*, *Brehm, Naumannia*, 1855, p. 289.
- Ciconia alba asiatica*, *Severtz. Turkest. Jevotn.* p. 145 (1873).
- Ciconia azretti*, *Severtz. tom. cit.* p. 68.
- Ciconia alba*, var. *major*, *Severtz. tom. cit.* p. 68.
- Ciconia alba*, var. *orientalis*, *Severtz. Str. F.* iii. p. 431 (1875: Turkestan).
- Ciconia mycteriorhyncha*, *Severtz. tom. cit.* p. 431.
- Ciconia mycteriorhyncha*, *Dresser, Ibis*, 1876, p. 324.
- Ciconia asiatica*, *Reichen. J. f. O.* 1877, p. 171.
- Ciconia azreth*, *Bogdan. Consp. Av. Imp. Ross.* p. 117 (1884).
- Ciconia ciconia*, *Hartert, Kat. Vogelssamml. Mus. Senckenb.* p. 204 (1891); *id. Ibis*, 1892, p. 512 (E. Prussia); *Reichen. Vög. deutsch-Ost-Afr.* p. 59 (1894: Victoria Nyanza; Wualaba; Igonda; Kakoma; Simiu River); *Shelley, B. Afr.* i. p. 159 (1896); *Sharpe, Handb. Brit. B.* iii. p. 97, pl. lxx. (1896).

**Adult male.** General colour above and below pure white, including the tail-feathers; lesser and median wing-coverts also white; scapulars, greater coverts, bastard-wing, primary-coverts, and quills black, with a purplish or greenish gloss; the inner primaries and the secondaries powdered with slaty grey on the outer web, generally sub-marginally, the grey varying in extent on the different feathers, being almost entirely wanting in some: "bill dark red; pouch black forwards, vermilion at gullet; legs and feet reddish pink, claws black" (*J. Scully*). Total length 36 inches, culmen 8.3, wing 23.5, tail 9.8, tarsus 8.8.

**Adult female.** Similar to the male. Total length 36 inches, culmen 8.1, wing 23, tail 9, tarsus 9.

**Young.** Resembles the adult, but the scapulars and quills are browner and not so glossy black.

The bill varies considerably in size, and there is also great variation in the amount of grey powdering on the quills. In a

female shot by Dr. Scully in Yarkand in July, the culmen only measured 5 inches, and the greater coverts have their outer webs powdered with grey like the secondaries. This may be a freshly-moulted young bird, as the quills and scapulars are black with the usual purple and greenish gloss of the adults. The soft parts were as follows:—"Bill dull yellowish-orange, dusky in parts; bare skin of chin (pouch) dusky orange; orbital skin dusky; legs and feet pale yellowish, becoming orange in parts; claws yellowish horny; iris greenish brown."

*Hab.* Europe, not extending to the far North, but as far East as Central Asia, and wintering in Africa and Northern India.

|                                |                                                   |                                  |
|--------------------------------|---------------------------------------------------|----------------------------------|
| a. Ad. st.                     | Europe.                                           | Old Coll.                        |
| b. Imm. sk.                    | Europe.                                           | Old Coll.                        |
| c. Ad. sk.                     | South Spain.                                      | Lord Lilford [P.]                |
| d. Ad. sk.                     | Egypt.                                            | G. Turnbull, Esq. [P.]           |
| e. Ad. sk.                     | Upper Egypt.                                      | Shelley Coll.                    |
| f. Ad. sk.                     | Ramaqueban R., Matabele-land, Nov. 15 (F. Oates). | W. E. & C. G. Oates, Esqrs. [P.] |
| g. Ad. sk.                     | Transvaal.                                        | Dr. R. B. Sharpe [P.]            |
| h. Ad. sk.                     | Mount Lebanon.                                    | S. Barody, Esq. [P.]             |
| i. Ad. sk.                     | Palestine.                                        | Canon Tristram [C.]              |
| k, l. Ad. sk.                  | Muscat, Arabia, Aug. 25, Sept. 7.                 | Surgeon-Col. Jayakar [P.]        |
| m, n. ♂ ad. et ♀ imm. sk.      | Yarkand, July (J. Scully).                        | Hume Coll.                       |
| o. ♂ ad. sk.                   | Delhi, Oct. 3 (C. T. Bingham).                    | Hume Coll.                       |
| p, q. Ad. sk.                  | Etawah, March.                                    | Hume Coll.                       |
| r, s, t. Ad. sk.               | Oudh, Dec. to March.                              | Hume Coll.                       |
| u. Skull.                      | South Germany.                                    | Dr. Gunther [C.]                 |
| v. Skeleton (skull imperfect). | Europe.                                           | Purchased.                       |

## 2. *Ciconia boyciana*.

*Ciconia alba* (nec Linn.), Schrenck, *Reis. Amurl.*, Vög. p. 454 (1860).  
*Ciconia boyciana*, Swinh. *P. Z. S.* 1873, p. 513 (Japan); *Scl. op. cit.* 1874, pp. 2, 306, pl. i.; *Dyb. J. f. O.* 1875, p. 256; *Tacz. Bull. Soc. Zool. France*, i. p. 257 (1876); *David & Oust. Ois. Chine*, p. 450 (1877); *Prjev. in Rowley's Orn. Misc.* iii p. 50 (1878: Lake Hanka, April, breeding); *Blakist. & Pryer, Ibis*, 1878, p. 224 (Tokio); *id. Trans. Soc. Jap.* viii. p. 200 (1880), *id. List B. Jap.* p. 121 (1882); *Bogd. Consp. Av. Imp. Ross.* p. 118 (1884); *Blakist. Amended List B. Jap.* p. 24 (1884); *Stejn. Proc. U.S. Nat. Mus.* x. p. 286 (1887: Fusan, Corea, Dec.); *Tacz. P. Z. S.* 1887, p. 611 (Corea, March); *id. P. Z. S.* 1888, p. 468; *Seebohm, B. Japan. Emp.* p. 228 (1890); *Tacz. Mém. Acad. Imp. Sci. St. Pétersb.* (7) xxxix. p. 973 (1893).

*Adult.* Similar to *C. ciconia* and pure white above and below; scapulars, greater coverts, bastard-wing, primary-coverts, and quills black, glossed with steel-green and purplish copper; the quills hoary grey for the greater part of the outer webs, this being less distinct on the inner primaries and absent on the secondaries; tail white; head, neck, and entire under surface of body pure

white; the under tail-coverts fluffy and filamentous: "bill horn-black, paler at tip; rictus, underside of rami and inter-ramal space lake-red; feet dull vermilion; iris cream-white, with black exterior circle; eyelids and bare skin round the eye vermilion-red" (*R. Swinhoe*). Total length 56 inches, culmen 9·5, wing 26, tail 9·7, tarsus 11.

*Adult female.* Similar to the male, but smaller.

*Hab.* Eastern Siberia, Corea, and Japan.

|               |                                                       |                     |
|---------------|-------------------------------------------------------|---------------------|
| a. ♀ ad. sk.  | Japan, Jan. 15.                                       | Tweeddale Coll.     |
| b. ♂ ad. sk.  | Japan, April 4.                                       | Zoological Society. |
| c, d. Ad. sk. | Japan ( <i>H. Pryer</i> ).                            | Seebohm Coll.       |
| e. ♀ ad. sk.  | Mouth of Amoor River,<br>May 8 ( <i>C. Dörries</i> ). | Seebohm Coll.       |
| f. ♀ ad. sk.  | Corea ( <i>C. W. Campbell</i> ).                      | Seebohm Coll.       |

### 3. *Ciconia nigra*.

Black Stork, *Albin*, *Nat. Hist. B.* iii. p. 77, pl. xxxii. (1740); *Lath. Gen. Syn.* ii. pt. 1, p. 50 (1785); *Yarrell, Brit. B.* ii. p. 493 (1843).

*La Cigogne brune*, *Briss. Orn.* v. p. 362, pl. 31 (1760); *D' Aubent. Pl. Enl.* viii. pl. 399.

*Le Heron noir*, *Briss. Orn.* v. p. 439 (1760); *Buff. Hist. Nat. Ois.* vii. p. 368 (1780).

*Ardea nigra*, *Linn. Syst. Nat.* i. p. 235 (1766); *Gm. Syst. Nat.* i. p. 623 (1788).

*La Cigogne noire*, *Buff. Hist. Nat. Ois.* vii. p. 271 (1780).

Black Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 94 (1785: Silesia).

*Ardea atra*, *Gm. Syst. Nat.* i. p. 641 (1788).

*Ardea chrysopelargus*, *Licht. Cat. Rer. Nat. Rar. Hamb.* p. 284 (1793).

*Ciconia nigra*, *Bechst. Naturg. Deutschl.* iv. p. 96 (1801); *Pallas, Zoogr. Rosso-Asiat.* ii. p. 114 (1811); *Vieill. N. Dict. d'Hist. Nat.* vii. p. 112 (1817); *Temm. Man. d'Orn.* ii. p. 561 (1820); *Licht. Verz. Doubl.* p. 76 (1823); *Wagl. Syst. Av.*, *Ciconia*, sp. 9, p. 139 (1827); *Werner, Atlas, Coureurs*, pl. 21 (1827); *Fleming, Brit. Anim.* p. 97 (1828); *Cuv. Règne Anim.* p. 513 (1829); *Rour, Orn. Prov.* pl. 325 (1830); *Less. Traité d'Orn.* p. 580 (1831); *Brehm, Vög. Deutschl.* p. 576 (1831); *Ménétr. Cat. Rais. Cauc.* p. 50 (1832: Lenkoran); *Jenyns, Man. Brit. Vertebr.* p. 193 (1835); *Naum. Vög. Deutschl.* ix. p. 231, taf. 229 (1836); *Gould, B. Eur.* iv. pl. 284 (1837); *Bp. Comp. List B. Eur. & N. Amer.* p. 46 (1838); *Cresp. Orn. Gard*, p. 377 (1840); *Keys. & Blas. Wirb. Eur.* pp. lxxx, 220 (1840); *Nordm. in Démid. Voy. Russ. Mérid.* iii. p. 264 (1840); *Selys-Longch. Faun. Belge*, p. 132 (1842); *Mühle, Orn. Griechenl.* p. 117 (1844); *Schl. Rev. Crit.* p. xcix (1844); *Gray, List Grall. Brit. Mus.* p. 88 (1844: Somersetshire); *Hodgs. Icon. ined. in Brit. Mus., Grall* tab. 72. no. 620; *id. in Gray's Zool. Misc.* p. 86 (1844); *Rüpp. Syst. Uebers.* p. 121 (1845); *Hewits. Eggs Brit. B.* ii. p. 281, pl. lxxvii. fig. 2 (1846); *Gray, Cat. Mamm. &c. Nepal pres. Hodgs.* p. 136 (1846); *id. Gen. B.* iii. p. 561 (1848); *Blyth, Cat. B. Mus. As. Soc. Beng.* p. 277 (1849: Dehra Dhoon); *Thomps. B. Irel.* ii. p. 178 (1850); *Harc. P. Z. S.* 1851, p. 146 (Madeira); *Macgill. Brit. B.* iv. p. 485 (1852); *Kjærb. Danm. Fugle*, taf. xxxii. fig. 5 (1852); *Schl. Vog. Nederl.* pl. 200 (1854); *Licht. Nomencl. Av. Mus. Berol.* p. 90

(1854: Germany); *Heugl. Syst. Uebers.* p. 60 (1856); *Hurtl. Orn. W.-Afr.* p. 227 (1857: Senegambia-Ashanti); *Sunder. Sc. Vogl.* pl. xlvii. fig. 2 (1858); *Tristr. Ibis*, 1859, p. 36 (Dead Sea); *Taylor, t. c.* p. 51 (Egypt); *Jaub. et Barth-Lapomm. Rich. Orn.* p. 354 (1859); *Schrenck, Ross. Annot., Vog.* p. 453 (1859); *Linderm. Vög. Griechentl.* p. 153 (1860); *Pouys, Ibis*, 1860, p. 347 (Butrinto & Corfu); *Hartl. J. f. O.* 1861, p. 270; *Schl. Dier. Nederl. Vogels*, pl. 20. fig. 4 (1861); *Simpson, Ibis*, 1861, p. 372 (Dobrudzha, breeding); *Swinh. P. Z. S.* 1863, p. 319; *Gray, List Brit. B.* p. 152 (1863); *Radde, Reis. Sibir., Vög.* p. 345 (1863: Bureja Mountains, April; Tarei-nor, May); *Schl. Mus. Pays-Bas, Ciconiæ*, p. 4 (1864); *Jerd. B. Ind.* iii. p. 735 (1864); *Nordm. J. f. O.* 1864, p. 376; *Adams, Ibis*, 1864, p. 30 (Egypt & Nubia); *Wright, t. c.* p. 144 (Malta, accidental); *Filippi, Viagg. Persia*, p. 351 (1865); *Gigkoti, Ibis*, 1865, p. 60 (Pisa, not observed); *Taylor, Ibis*, 1867, p. 70 (Egypt); *Hamond, t. c.* p. 382 (Norfolk); *Doyl. et Gerbe, Orn. Eur.* ii. p. 318 (1867); *Layard, B. S. Afr.* p. 315 (1867); *Tristr. Ibis*, 1868, p. 326 (Palestine); *Dyb. J. f. O.* 1868, p. 337; *Borgyr. Vogelf. Norddeutchl.* p. 124 (1869); *Doderl. Avif. Sicil.* p. 218 (1869); *Elwes & Buckley, Ibis*, 1870, p. 334 (Bulgaria); *Finach & Hartl. Vog. Ostaf.* p. 719 (1870); *Fritsch, Vog. Eur.* pl. 41. fig. 2 (1870); *Saunders, Ibis*, 1871, p. 393 (Spain); *Salvad. Faun. Ital., Ucc.* p. 248 (1871); *Gould, B. Gt. Brit.* iv. pl. 31 (1871); *Swinh. P. Z. S.* 1871, p. 411; *Gray, Hand-l. B.* iii. p. 35, no. 10186 (1871); *Harting, Handb. Brit. B.* p. 145 (1872); *Shelley, B. Egypt*, p. 265 (1872); *Serretz, Turkestan. Jervotn.* p. 68 (1873: breeding); *Brooke, Ibis*, 1873, p. 341 (Sardinia); *Palmén, Finl. Fogl.* p. 286 (1873); *Heugl. Orn. N. O.-Afr.* ii. pt. 1, p. 1102 (1873); *Dresser, B. Eur.* vi. p. 300, pl. 406 (1873); *Tacz. J. f. O.* 1873, p. 106, 1874, p. 336; *Irby, Orn. Str. Gibr.* p. 190 (1875); *Danf. & Harvie Brown, Ibis*, 1875, p. 425 (Transylvania); *Fallon, Orn. Belg.* p. 158 (1875); *Dresser, Ibis*, 1876, p. 324; *Blanf. East Persia*, ii. p. 297 (1876); *Butler, Str. F.* iv. p. 22 (1876: Deesa), *Scully, t. c.* p. 194 (E. Turkestan); *Fairbank, t. c.* p. 263 (Deccan); *Tacz. Bull. Soc. Zool. France*, i. p. 257 (1876); *id. op. cit.* ii. p. 159 (1877: Poland); *Butler, Str. F.* v. p. 233 (1877: Deesa, July to Feb.); *Durid et Oust. Ois. Chine*, p. 450 (1877); *Reichen. J. f. O.* 1877, p. 169; *Prjev. in Rowley's Orn. Misc.* iii. p. 50 (1878: Ordos; Kau-su; Lake Hanka, March); *Danford, Ibis*, 1878, p. 34 (Asia Minor, March); *Davidson & Wenden, Str. F.* vii. p. 90 (1878: Deccan); *Finach, Verh. z.-b. Ges. Wien*, xxix. p. 248 (1879: Marka-kul, June); *Reinhardt, Ibis*, 1879, p. 119 (Denmark, breeding); *Hume, Str. F.* viii. p. 114 (1879); *Scully, t. c.* p. 359 (Nepal Valley); *Butler, Cat. B. Sind etc.* p. 68 (1879); *id. Cat. B. S. Bomb. Pres.* p. 81 (1880); *Elwes, Ibis*, 1880, p. 388 (Denmark); *Biddulph, Ibis*, 1881, p. 98; *Scully, t. c.* p. 591 (Gilgit); *Butler, Str. F.* ix. p. 433 (1881: Deccan); *Seebohm, Ibis*, 1882, p. 225 (Astrakhan, migrant); *Holub & Pelz. Beitr. Orn. Sudafr.* p. 287 (1882); *B. O. U. List Brit. B.* p. 112 (1883); *Seebohm, Ibis*, 1882, p. 32 (Caucasus); *Saunders, ed. Farvell's Brit. B.* iv. p. 225 (1884); *Chapman, Ibis*, 1884, p. 98 (Spain); *Clarke, t. c.* p. 147 (Slavonia, breeding); *Prentis, Zool.* 1884, p. 429 (Kent); *Seebohm, Hist. Brit. B.* ii. p. 529 (1884); *Tristr. Faun. & Flor. Palest.* p. 112 (1884); *Sharpe, ed. Layard's B. S. Afr.* p. 729 (1884); *Radde, Orn. Cauc.* pp. 42, 396 (1884: Tiflis, 7000 ft., breeding); *Murray, Verteb. Faun. Sind*, p. 267 (1884);



- Swinhoe & Barnard. Ibis*, 1885, p. 135 (Mhow dist.): *Giglioli, Arif. Ital.* p. 267 (1886): *Salvad. Elenco Ucc. Ital.* p. 247 (1886); *Aquila, Ibis*, 1886, p. 267 (Transvaal): *Tad. Ibis*, 1887, p. 374 (Portugal): *Giglioli & Manzella, Iconogr. Arif. Ital.* pt. xxxvii (1887): *Hume, Str. F.* xi. p. 331 (1888: Manipur): *Irbis. Key List Brä. B.* p. 93 (1888): *Harvie Bruce & Buckley, Fortsch. Forsch. Inner Hebr.* p. 96 (1888): *Sauv. Journ. Linn.* (2) no. 1, p. 37 (1889): *Saunders, Man. Brä. B.* p. 377 (1889): *Reichenb. Syst. Verz. Vog. Deutschl.* p. 42 (1889): *Harting, Zool.* 1890, p. 353 (Silly Isl.): *Giglioli, Arif. Ital.* 1st Renoc. p. 445 (1889); id. 2nd Renoc. p. 645 (1890): id. 3rd Renoc. p. 509 (1891): *Sharpe, Ibis*, 1891, p. 112 (Faou): *Sylvan, t. c.* pp. 327, 493 (Lower Yangtze): *Lillford, Cal. Fig. Brä. B.* Part xx (1891): *Gütke, Vogelk. Helgol.* p. 465 (1891): *Frivaldsky, Ar. Hung.* p. 134 (1891): *Madarász, Erläut. Aust. Ungar. Vögelk.* p. 107 (1891): *Reiser, Vogelk. Landesh. Sarajewo*, p. 105 (1891): *Seebach, Ibis*, 1892, p. 21 (Heligoland): *Hartert, t. c.* p. 513 (E. Prussia): *Evance, Journ. Linn.* (2) no. viii p. 245, no. ix p. 6 (1893): *Rickett, Ibis*, 1894, p. 224 (Fochow): *Irbis. Orn. Str. Gibr.* 2nd ed. p. 210 (1895): *Gütke, Helgol., Engl. ed.* p. 453 (1895): *Whitaker, Ibis*, 1895, p. 104 (Tunis): *Shelley, B. Afr.* i. p. 159 (1896): *Rickett & De La Touche, Ibis*, 1896, p. 203 (Fochow, Oct.).
- Cuculia fusca*, *Brehm, Vog. Deutschl.* p. 576 (1831).
- Melanopelargus niger*, *Reichenb. Gall. tab. chvi. figs.* 453-54 (1846): *Bp. Comp. Ar.* ii. p. 105 (1855): *Hume, Str. F.* i. p. 252 (1873: Punjab): *Ball, op. cit.* ii. p. 433 (1874: Chota Nagpur): id. *op. cit.* vii. p. 230 (1875: Ganges to Godavari): *Bugd. Comp. Ar. Imp. Russ.* p. 119 (1884): *Hume & Reichenb. Nomencl. Mus. Hein.* p. 311 (1890: Harz).

*Adult male in breeding-plumage.* General colour above glossy, for the most part metallic-purple with green margins to the feathers, the green predominating on the neck and mantle and the lesser wing-coverts, the median and greater coverts more distinctly purplish but with bronzy reflections: primaries black with a greenish gloss; lower back, rump, and upper tail-coverts dusky brown with purplish edgings, becoming green on the latter: tail-feathers glossy purplish bronze: crown of head dusky blackish, glossed with green, especially towards the nape: the neck all round green, with a strong gloss of purple on the hinder neck, and again on the lower throat: sides of face and upper throat brilliant purple, with golden-bronze reflections: fore-neck and chest greenish, with a slight purple gloss: remainder of under surface from the chest downwards pure white, including the axillaries: under wing-coverts dusky slate-col. or with a slight gloss of green or purple: "bill, orbital space, and pouch coral-red: legs and feet coral-red, blackish on front of tarsi: iris brown" (A. O. Hume). Total length 36 inches, culmen 7.7, wing 21.5, tail 8, tarsus 8.2.

*Adult female.* Similar to the male, but not quite so glossy: "bill and feet red, the former lighter at the tip: orbital skin lead-colour" (J. Scudg.). Total length about 36 inches, culmen 7, wing 21, tail 8.5, tarsus 7.6.

*Young birds.* Browner than the adults, with very little green or purplish reflections; the head and neck paler brown, with whitish

spots at the ends of the feathers, the feathers of the chest also margined with whity-brown.

*Hab.* Europe generally, as far north as Southern Sweden, as far east as Mongolia and China; wintering in Africa and the Indian Peninsula.

|                       |                                                               |                           |
|-----------------------|---------------------------------------------------------------|---------------------------|
| a. Ad. st.            | Egypt.                                                        | Capt. Colin Campbell      |
| b, c. Ad. et imm. sk. | Egypt.                                                        | [P.]<br>G. Turnbull, Esq. |
| d. Juv. sk.           | Cape Colony.                                                  | [P.]<br>Sir A. Smith [C.] |
| e. ♂ ad. sk.          | Potchefstroom, Transvaal, June 12 ( <i>T. Ayres</i> ).        | Gurney Coll.              |
| f. Juv. sk.           | Fao, Persian Gulf, Sept. 5.                                   | W. D. Cumming, Esq. [P.]  |
| g. ♀ ad. sk.          | River Indus, near Kusmore, Sind, Dec. 13 ( <i>A. O. H.</i> ). | Hume Coll.                |
| h. ♂ imm. sk.         | Sukkur, Sind, Dec. 16 ( <i>A. O. H.</i> ).                    | Hume Coll.                |
| i. ♂ ad. sk.          | Sehwan, Sind, Jan. 24 ( <i>A. O. H.</i> ).                    | Hume Coll.                |
| k. Ad. sk.            | Sirza district, Punjab, June.                                 | Hume Coll.                |
| l. Ad. sk.            | Eastern Dhoon ( <i>Col. Thelwall</i> ).                       | Hume Coll.                |
| m. ♀ ad.; n. Juv. sk. | Nepal Valley, Nov. 29 ( <i>J. Scully</i> ).                   | Hume Coll.                |
| o. Ad. sk.            | Nepal                                                         | Hodgson Coll.             |
| p. ♀ imm. sk.         | Mouth of the Amoor River, Sept. 3 ( <i>C. Dörries</i> ).      | Seebolin Coll.            |

### 5. ANASTOMUS.

|                                                                           | Type.                    |
|---------------------------------------------------------------------------|--------------------------|
| <i>Anastomus</i> , <i>Bonn. Enc. Méth., Orn.</i> p. xciii (1790) .        | <i>A. oscitans</i> .     |
| <i>Hians</i> , <i>Lacép. Mém. Inst. Paris</i> , iii p. 517 (1801) .       | <i>A. oscitans</i> .     |
| <i>Rhynchochasme</i> , <i>Herm. Obs. Zool.</i> p. 156 (1804) .            | <i>A. oscitans</i> .     |
| <i>Empharia</i> , <i>Rafinesque, Analyse</i> , p. 70 (1815) .             | <i>A. oscitans</i> .     |
| <i>Chænorhamphe</i> , <i>Dumont, Dict. Sci. Nat.</i> viii. p. 51 (1817) . | <i>A. oscitans</i> .     |
| <i>Chenorhamphus</i> , <i>Gray, Gen. B.</i> iii. p. 562 (1848) .          | <i>A. oscitans</i> .     |
| <i>Hiator</i> , <i>Reichenb. Av. Syst. Nat.</i> p. xii (1852-53) .        | <i>A. lamelligerus</i> . |
| <i>Range.</i> Africa. Madagascar. India.                                  |                          |

### Key to the Species.

- a. General plumage white or ashy-grey; scapulars, quills, and tail black; no lanceolate prolongation of the shafts of the breast-feathers into horn-like appendages . . . . . *oscitans*, p. 306.
- b. General plumage black, with horny elongations to the shafts of the breast-feathers . . . . . *lamelligerus*, p. 308.

### 1. *Anastomus oscitans*.

- Le Bec-Ouvert de Pondichery, *D'Aubert. Pl. Enl.* viii. pl. 932.  
 Le Bec-Ouvert, *Buff. Hist. Nat. Ois.* vii. p. 409 (1780).  
 Le Bec-Ouvert blanc des Indes, *Sonn. Voy. Ind. Orient.* ii. p. 129, pl. 122 (1782).  
*Ardea oscitans*, *Bodd. Tabl. Pl. Enl.* p. 55 (1783).

- Pondicherry Heron, *Lath. Gen. Syn.* iii. pt. 1, p. 101 (1785).  
 Coromandel Heron, *Lath. tom. cit.* p. 102.  
*Ardea coromandeliana*, *Gm. Syst. Nat.* i. p. 646 (1788).  
*Ardea pondiceriana*, *Gm. tom. cit.* p. 646.  
*Anastomus albus*, *Vieill. N. Dict. d'Hist. Nat.* i. p. 489 (1816); *id. Enc. Méth.* iii. p. 1037, pl. 55. fig. 4 (1823).  
*Anastomus cinereus*, *Vieill. tom. cit.* p. 490; *id. Enc. Méth.* iii. p. 1037, pl. 55. fig. 3 (1823).  
*Hians indicus*, *Less. Man. d'Orn.* ii. p. 251 (1828).  
*Hians coromandelianus*, *Less. Traité d'Orn.* p. 581 (1831); *Reichenb. Grall.* tab. xcv. fig. 439 (1850).  
*Anastomus coromandelianus*, *Vieill. Gal. Ois.* ii. p. 133, pl. 251 (1834).  
*Anastomus typus*, *Temm. Pl. Col. Tabl. Méth.* p. 94 (1838).  
*Anastomus oscitans*, *Gray, List Grall. Brit. Mus.* p. 88 (184-); *id. Gen. B.* iii. p. 562 (1848); *Blyth, Cat. B. Mus. As. Soc. Beng.* p. 276 (1849: Calcutta); *Layard, Ann. & Mag. Nat. Hist.* xiv. p. 115 (1854); *Irby, Ibis*, 1861, p. 244 (Oudh); *Gray, Cat. Mamm. etc. Nepal pres. Hodgs.* p. 72 (1863); *Jerd. B. Ind.* iii. p. 765 (1864); *Blyth, Ibis*, 1867, p. 173; *Beavan, Ibis*, 1868, p. 398; *Gray, Hand-l. B.* iii. p. 36, no. 10197 (1871); *Holdsw. P. Z. S.* 1872, p. 479 (Ceylon); *Hume, Nests & Eggs Ind. B.* p. 630 (1873); *id. Str. F.* i. p. 107 (1873: Sind); *Legge, Ibis*, 1874, p. 31 (S.E. Ceylon), 1875, p. 404; *Blyth, B. Burma*, p. 158 (1875); *Bingham, Str. F.* iv. p. 212 (1876); *Davidson & Wenden, Str. F.* vii, p. 90 (1878: Deccan); *Murray, t. c.* p. 113 (Sind); *Butler, t. c.* p. 188 (Sind, breeding); *Ball, t. c.* p. 231 (Ganges to Godavery); *Cripps, t. c.* p. 310 (Faridpur); *Doig, t. c.* p. 467 (Sind); *Hume, t. c.* p. 491 (Calcutta); *Butler, Cat. B. Sind etc.* p. 71 (1879); *Hume, Str. F.* viii. p. 114 (1879); *Doig, t. c.* p. 371 (E. Narra, nesting); *Legge, B. Ceylon*, p. 1103 (1880); *Butler, Cat. B. S. Bomb. Pres.* p. 85 (1880); *id. Str. F.* ix, p. 435 (1881: Deccan); *Reid, op. cit.* x. p. 77 (1881: Lucknow); *Oates, t. c.* p. 244 (1882: Pegu); *Davidson, t. c.* p. 324 (Khandeish); *Davison, t. c.* p. 417 (1883: Wynaad); *Oates, Handb. Brit. Burm.* ii. p. 266 (1883); *Parker, Ibis*, 1883, p. 195 (Ceylon); *Murray, Vertebr. Faun. Sind*, p. 277 (1884); *Swinh. & Barnes, Ibis*, 1885, p. 136 (Mhow distr.); *Hume, Str. F.* xi. p. 330 (1888: Manipur); *Oates, ed. Hume's Nests & Eggs Ind. B.* iii. p. 224 (1890).  
*Anastomus pondicerianus*, *Licht. Nomencl. Av. Mus. Berol.* p. 90 (1854); *Bp. Consp. Av.* ii. p. 109 (1855); *Schl. Mus. Pays-Bas, Ciconiæ*, p. 15 (1864).

**Adult male.** General colour above pure white, including the wing-coverts, lower back, rump, and upper tail-coverts; scapulars, bastard-wing, primary-coverts, quills, and tail-feathers black with slight purple and green reflections, the under surface of the wings and tail being metallic green; entire under surface of body, including the under tail-coverts, pure white: "bill dark horny grey; legs and feet fleshy white; claws greyish brown; iris brown; bare skin of face blackish" (*C. T. Bingham*). Total length 30 inches, culmen 6.1, wing 15.5, tail 6.4, tarsus 6.3.

**Adult female.** Similar to the male, but generally with a slight tinge of grey over the white plumage. Total length 30 inches, culmen 6.4, wing 16, tail 6.2, tarsus 6.

*Young.* Much greyer than the adult, the back smudged with ashy brown, and the head, neck, throat, and chest ashy, the fore-neck having a few dusky streaks; bill with the edges of the mandibles coterminous and not gaping as in the adults: "bill deep greenish black; feet and legs fleshy brown with a purplish tinge; bare skin of chin bluish ash-colour; bare skin of cheeks and face black; iris deep brown" (*C. T. Bingham*).

*Hab.* Indian Peninsula and Ceylon, east to Cochin China.

|                     |                                                         |                          |
|---------------------|---------------------------------------------------------|--------------------------|
| a. Ad. st.          | India.                                                  | Purchased.               |
| b-c. ♂ ♀ ad. et     | Delhi, Oct., Dec., April, June                          | Hume Coll.               |
| ♂ ♀ juv. sk.        | ( <i>C. T. Bingham</i> ).                               |                          |
| f. Ad. sk.          | Allahabad, Oct.                                         | Hume Coll.               |
| g. Ad. sk.          | Oudh.                                                   | Pinwill Coll.            |
| h, i. Ad. sk.       | Oudh, Oct., Dec.                                        | Hume Coll.               |
| k-r. Ad. sk.        | Nepal.                                                  | Hodgson Coll.            |
| s, t, u. Ad. sk.    | Bhootan ( <i>F. W. Montairo</i> ).                      | India Museum.            |
| v, w. Ad. et imm.   | Mymensing.                                              | Godwin-Austen Coll.      |
| x. Ad. sk.          | Bengal ( <i>Dr. Falconer</i> ).                         | India Museum.            |
| y. ♂ imm. sk.       | Sumbalpur, Central Provinces, Feb. 23.                  | Hume Coll.               |
| z. ♂ imm. sk.       | Depalpur, Jan. 11.                                      | Colonel Swinhoe [P.]     |
| a', b'. ♀ ad. et    | Raipur.                                                 | Hume Coll.               |
| ad. sk.             |                                                         |                          |
| c', d'. ♂ ♀ ad. sk. | Seoni.                                                  | Hume Coll.               |
| e'. Juv. sk.        | Western Khandeish, Nov. 24 ( <i>J. Davidson</i> ).      | Hume Coll.               |
| f'. Ad. sk.         | Ahmednuggur ( <i>S. B. Fairbank</i> ).                  | Tweeddale Coll.          |
| g'. Ad. sk.         | Western Ghats, Bombay Presidency ( <i>Coussmaker</i> ). | Gould Coll.              |
| h'. ♀ ad. sk.       | S.E. coast of Ceylon, March 20.                         | Colonel W. V. Legge [P.] |
| i'. ♀ imm. sk.      | Manipur, March 4 ( <i>A. O. H.</i> ).                   | Hume Coll.               |
| k'. Ad. sk.         | Cochin China, Nov.                                      | M. E. Pierre [P.]        |

## 2. *Anastomus lamelligerus*.

*Anastomus lamelligerus*, *Temm. Pl. Col. v. pl. 236* (1823); *Wagl. Syst. Ar. Anastomus*, sp. 2, p. 142 (1827); *Less. Traité d'Orn.* p. 581 (1831); *Gray, List Grall. Brit. Mus.* p. 89 (1844: Madagascar); *id. Gen. B. iii. p. 562* (1848); *Rüpp. Syst. Uebers.* p. 121 (1845: Senaar and Abyssinia); *Hartl. Ann. & Mag. Nat. Hist.* (2) ii. p. 392 (1848: Madagascar); *Reichenb. Grall. tab. 167. fig. 438* (1850); *Heugl. Syst. Uebers.* p. 60 (1856); *Hartl. Orn. W.-Afr.* p. 229 (1857: Senegambia); *id. J. f. O.* 1860, p. 168 (Madagascar); *id. Faun. Madag.* p. 76 (1861); *id. J. f. O.* 1861, p. 270; *Pollen, Nat. Tijdschr. Nederl. Dierk.* i. p. 321 (1863); *Schl. Mus. Pays-Bas, Ciconiæ*, p. 15 (1864); *Kirk, Ibis*, 1864, p. 334 (Zambesi and Shire Rivers); *Antin. Cat. descr. Ucc.* p. 103 (1864); *Schl. P. Z. S.* 1866, p. 425 (Madagascar); *Layard, B. S. Afr.* p. 317 (1867); *Grand. Rev. et Mag. de Zool.* 1867, p. 420; *Schl. & Pollen, Faun. Madag., Ois. ii. p. 128* (1868); *Ayres, Ibis*, 1869, p. 302 (Transvaal); *Cab. in Von der Decken's Reise*, iii. p. 48

(1869); *Finsch & Hartl. Vög. Ostaf.* p. 726 (1870); *Gray, Hand-l. B.* iii. p. 36, no. 10198 (1871); *Ayres, Ibis*, 1871, p. 270 (Transvaal); *Gurney in Anderss. B. Dam. Ld.* p. 283 (1872); *Heugl. Orn. N.O.-Afr.* ii. pt. 1, p. 1119 (1873); *Bocage, J. f. O.* 1876, p. 301 (Humbe); *Hartl. Vög. Madag.* p. 313 (1877); *Reichen. J. f. O.* 1877, pp. 164, 276; *Fischer, J. f. O.* 1879, pp. 284, 297; *Böhm, J. f. O.* 1882, p. 190 (Kingani; Ugalla River); *Holub & Pelz. Beitr. Orn. Südaf.* p. 289 (1882); *Schalow, J. f. O.* 1883, p. 340; *W. A. Forbes, Ibis*, 1883, p. 537 (River Niger); *Fischer, Zeitschr. ges. Orn.* i. p. 385 (1884: Maurui); *Böhm, J. f. O.* 1885, p. 39 (Gonda); *Fischer, t. c.* p. 117 (Engatana); *Hartert, J. f. O.* 1886, p. 607 (Sokoto); *Emin, Ibis*, 1887, p. 474 (Albert Nyanza); *Reichen. J. f. O.* 1887, p. 49 (Simiu R.); *Matschie, t. c.* p. 146 (M'Buga; Itambe Lake; Lufira; Likulwe; Upamba Lake); *Reichen. J. f. O.* 1889, p. 268 (Quaqua); *Shelley, Ibis*, 1894, p. 477 (Nyasa-land); *Fleck, J. f. O.* 1894, p. 386 (Nocana, July); *Reichen. Vög. Deutsch-Ost-Afr.* p. 57, figs. 28, 29 (1894: Bagamoyo; Tanga; Kawende; Lake Tanganyika); *Shelley, B. Africa*, i. p. 159 (1896); *id. Ibis*, 1897, p. 551 (Nyasa-land).

*Hians capensis*, *Less. Man. d'Orn.* ii. p. 252 (1828).

*Anastomus laminigerus*, *Gray in Griffith's Anim. Kingd.* iii. pp. 353, 510, cum tab. (1829).

*Hiator lamelligerus*, *Reichenb. Natürl. Syst. Vög.* pp. 25, xix (1852); *Bp. Consp. Av.* ii. p. 109 (1855).

*Anastomus madagascariensis*, *Milne-Edw. C. R.* xci. p. 1037 (1880); *id. & Grandid. Hist. Nat. Madag., Ois.* p. 519, pls. 211-214 (1882); *Sibree, Ibis*, 1892, pp. 113, 117 (Madagascar); *Shelley, B. Africa*, i. p. 159 (1896).

*Hiator lamelliger*, *Heine & Reichen. Nomencl. Mus. Hein.* p. 312 (1890: Senaar).

**Adult.** General colour above black, with a very slight greenish gloss; the mantle, scapulars, and upper back with stiffened glossy plumes of bronzy brown, some of them glossed with metallic purple; wings similarly bronzed and glossed; greater coverts, bastard-wing, primary-coverts, quills, and tail-feathers black, distinctly glossed with green, the under surface of the quills and tail-feathers metallic green; head, neck, and underparts black, with a few of the feathers of the crown, face, and throat ornamented with tips of metallic black; the feathers on the lower throat and fore-neck with elongated lanceolate tips of metallic green or bronzy brown; breast and abdomen black, the feathers with elongated narrow tips of metallic horn; under wing-coverts and axillaries blackish: "bill dusky, basal half whitish, and conspicuous when the bird is freshly killed; iris double, the inner ring pale yellow, the outer dusky" (*T. Ayres*). Total length 28 inches, culmen 7, wing 15.7, tail 7, tarsus 6.4.

Professor Milne-Edwards and M. Grandidier have separated the Madagascar bird as distinct from the African species on account the straighter bill and the longitudinal striations on its sides. These striations appear to me to be assumed with the adult breeding-plumage, as the young birds certainly have smooth sides

to the bills. I cannot see any reason for separating the Madagascar bird from the African form.

Young birds are browner than the adults and have less gloss, the wing-coverts and dorsal plumes having pale whity-brown tips, as do also the feathers of the fore-neck and chest; the throat is whitish.

*Hab.* Africa and Madagascar.

|                                |                                           |                          |
|--------------------------------|-------------------------------------------|--------------------------|
| a. Ad. st.                     | Fazogloa, N.E. Africa.                    | Massena Coll.            |
| b. Juv. sk.                    | Fazogloa.                                 | Massena Coll.            |
| c. Ad. sk.                     | Dem Bekir, Niam Niam Country, May.        | F. Bohndorff [C.].       |
| d. Ad. sk.                     | Rufiji River (Lat. 8° S.), E. Africa.     | Capt. Wharton [P.].      |
| e, f, g. ♂ ♀ ad. et juv. sk.   | Lake Shirwa, Nyasa-land, July (A. Whyte). | Sir H. H. Johnston [P.]. |
| h. ♀ ad. sk.                   | Karonga, Nyasa-land, July (A. Whyte).     | Sir H. H. Johnston [P.]. |
| i. ♀ ad. st.                   | Transvaal (T. Ayres).                     | Shelley Coll.            |
| k. Juv. sk.                    | Transvaal (T. Ayres).                     | Shelley Coll.            |
| l. Ad. sk.                     | S.E. Africa.                              | J. Rocke, Esq. [P.].     |
| m. Ad. st.                     | Madagascar.                               | Purchased.               |
| n. Ad. sk.                     | Madagascar, Aug. 29.                      | Mr. A. Crossley [C.].    |
| o. Skeleton (skull imperfect). | Madagascar.                               | Mr. A. Crossley [C.].    |

## 6. XENORHYNCHUS.\*

*Xenorhynchus*, Bp. *Consp. Av.* ii. p. 106 (1855). . . . . Type. *X. australis*.

*Range.* The same as that of the single species.

### 1. *Xenorhynchus asiaticus*.

Indian Jabiru, Lath. *Gen. Syn. Suppl.* i. p. 231 (1787).

Lohaujung Heron, Lath. *tom. cit.* p. 238.

*Mycteria asiatica*, Lath. *Ind. Orn.* ii. p. 670 (1790); Vieill. *N. Dict. d'Hist. Nat.* xvi. p. 439 (1817); Butler & Hume, *Str. F.* iv. p. 22 (1876).

*Ardea indica*, Lath. *Ind. Orn.* ii. p. 701 (1790)

*Mycteria australis*, Shaw, *Trans. Linn. Soc.* v. p. 34 (1798); id. & Nodder, *Nat. Misc.* xv. pl. 601; Lath. *Ind. Orn. Suppl.* p. lxiiv (1801); Vieill. *N. Dict. d'Hist. Nat.* xvi. p. 440 (1817); Gray, *List Grall. Brit. Mus.* p. 89 (1844); Hodgs. *Icon. med. in Brit. Mus.*, Grall. pl. 73. no. 801; id. in Gray's *Zool. Misc.* p. 80 (1844); Gray, *Cat. Mamm. &c. Nepal pres. Hodgs.* p. 136 (1846); Gould, *B. Austr.* vi. pl. 51 (1847); Blyth, *Cat. B. Mus. As. Soc.* p. 276 (1849: Calcutta distr.); Reichenb. *Grall.* tab. xciv. fig. 445, cccxii. fig. 2387 (1850); Bennett, *Gatherings of a Naturalist in Australasia*, p. 195, pl. i. (1860); Parker, *P. Z. S.* 1860, p. 328; Irbys, *Ibis*, 1861, p. 244 (Oudh); Jerd. *B. Ind.* iii. p. 734 (1864);

\* *Xenorhynchus nanus*, De Vis, *Proc. Linn. Soc. N. S. W.* (2) iii. pp. 1287, 1292, pl. 35. figs. 11, 11 b (1888). Fossil.

- Diggles, Orn. Austr.* pl. v. (1865); *Blyth, Ibis*, 1865, p. 35; *Ramsay, t. c.* p. 87 (Port Denison); *Blyth, Ibis*, 1867, p. 172; *Beavan, Ibis*, 1868, p. 397 (Thatone Creek); *Horne, Ibis*, 1870, p. 295, 1871, pp. 110-112 (Etawah, nesting); *Gray, Hand-l. B.* iii. p. 35, no. 10192 (1871); *Hayes Lloyd, Ibis*, 1873, p. 418; *Ball, Str. F.* ii. p. 433 (1874: Chota Nagpur); *Hume, t. c.* p. 483; *D'Alb. Ibis*, 1877, p. 372 (Fly River, New Guinea); *Ramsay, Proc. Linn. Soc. N.S.W.* ii. p. 198 (1877); *Reichen. J. f. O.* 1877, p. 167; *Simson, Ibis*, 1882, p. 93 (Dacca).  
*New Holland Jabiru, Lath. Gen. Syn. Suppl.* ii. p. 294, pl. cxxxviii. (1802).  
*Ciconia australis*, *Temm. Pl. Col.* v. Livr. 51 (1824); *Gray, Gen. B.* iii. p. 561 (1848); *Schl. Mus. Pays-Bas*, *Ciconiæ*, p. 6 (1864).  
*Ciconia leucoptera*, *Wagl. Syst. Av.*, *Ciconia*, sp. 6, p. 138 (1827).  
*Ciconia xenorhynchus*, *Wagl. l. c.*  
*Ciconia (Mycteria) australis*, *Gray & Hardw. Ill. Ind. Zool.* i. pl. 64 (1832).  
*Ciconia asiatica*, *Gray, Gen. B.* iii. p. 561 (1848).  
*Xenorhynchus australis*, *Bp. Consp. Av.* ii. p. 106 (1855); *Gould, Handb. B. Austr.* ii. p. 293 (1865); *Blyth & Wald. B. Burm.* p. 158 (1875); *Ramsay, Proc. Linn. Soc. N.S.W.* i. p. 191 (1876); *Casteln. & Ramsay, t. c.* p. 386 (Gulf of Carpentaria); *Legge, B. Ceylon*, p. 1117 (1880); *Ramsay, Proc. Linn. Soc. N.S.W.* (2) ii. p. 172 (1887: N.W. Australia); *North, t. c.* p. 987; *id. Cat. Nests & Eggs Austr. B.* p. 315 (1889); *Cox & Hamilton, Proc. Linn. Soc. N.S.W.* (2) iv. p. 420 (1889: Mudgee distr.).  
*Xenorhynchus indica*, *Bp. Consp. Av.* ii. p. 107 (1855).  
*Mycteria indica*, *Gray, Hand-l. B.* iii. p. 35, no. 10191 (1871); *Hume, Nests & Eggs Ind. B.* p. 607 (1873); *id. Str. F.* i. p. 252 (1873); *Adam, t. c.* p. 398 (Sambhur); *Reichen. J. f. O.* 1877, p. 167.  
*Xenorhynchus asiaticus*, *Hume & Davison, Str. F.* vi. p. 469 (1878: Pahpoon); *Oates, op. cit.* vii. p. 51 (1878: Pegu, Dec., breeding); *Hume, t. c.* p. 67 (Rajpootana); *Davidson & Wenden, t. c.* p. 90 (Deccan); *Ball, t. c.* p. 230 (Ganges to Godavery); *Butler, Cat. B. Sind etc.* p. 68 (1879); *Hume, Str. F.* viii. p. 114 (1879); *Doig, t. c.* p. 371 (Eastern Narra, breeding); *White, Proc. R. Soc. Queensl.* iii. pp. 136-139 (1880); *Butler, Str. F.* ix. p. 432 (1880: Deccan); *Parker, t. c.* p. 484 (Ceylon); *Reid, op. cit.* x. p. 74 (1881: Lucknow); *Oates, t. c.* p. 242 (Pegu); *Salvad. Orn. Papuasias etc.* iii. p. 377 (1882); *Oates, Handb. B. Brit. Burm.* ii. p. 264 (1883); *Swinh. & Barnes, Ibis*, 1885, p. 135 (Mhow); *Hume, Str. F.* xi. p. 330 (1888: Manipur); *Ramsay, Tab. List Austr. B.* p. 20 (1888: Australia generally, except the southern portion); *Oates's ed. Hume's Nests & Eggs Ind. B.* iii. p. 265 (1890); *Salvad. Agg. Orn. Papuasias etc.* iii. p. 209 (1891).

**Adult male.** General colour above white from the hind-neck to the upper tail-coverts, including the latter; the whole of the lesser wing-coverts white, forming a large wing-patch; the median and greater coverts as well as the innermost secondaries, scapulars, and tail-feathers black, glossed with metallic green, steel-blue, and purple; the bastard-wing like the greater coverts, but the edge of the wing, primary-coverts, and quills white, as also the base of the tail; head and neck metallic bluish green, rather more purple on the neck, and with a large patch of purplish bronze on



the occiput and nape; under surface pure white, including the under tail-coverts and under wing-coverts, excepting the lowest row of median coverts which forms a large patch of metallic green: "bill black; gular skin and eyelids dusky purple; legs and toes coral-red; iris bluish brown" (*E. W. Oates*). Total length 48 inches, culmen 12, wing 22·5, tail 8·5, tarsus 12.

*Adult female*. Similar to the male. Total length 45 inches, culmen 11·5, wing 21·5, tail 8·5, tarsus 11.

*Young*. Differs from the adult in being duller and more green, with ashy-brown edges to all the feathers of the upper surface; lower back, rump, and upper tail-coverts white, with a little brown on the rump; the head and neck brown; the mantle and lesser wing-coverts brown, with hoary-grey edges and a slight purplish gloss; the quills white on the inner webs, greenish brown on the outer quills, dusky below with a metallic green gloss; the under wing-coverts and the primary-coverts brown, as also the lower median coverts.

*Hab.* Indian Peninsula to the Burmese Provinces and the Malayan Peninsula. New Guinea and Northern Australia.

|                                    |                                                  |                            |
|------------------------------------|--------------------------------------------------|----------------------------|
| <i>a, b.</i> Ad. et juv. sk.       | India.                                           | Dr. Royle [P.]             |
| <i>c.</i> Juv. sk.                 | Rohtuck, Punjab, Dec. 28<br>( <i>A. O. H.</i> ). | Hume Coll.                 |
| <i>d.</i> Ad. sk.                  | Dehra Dhoon, Jan.                                | Hume Coll.                 |
| <i>e.</i> Ad. sk.                  | Oudh.                                            | Pinwill Coll.              |
| <i>f, g, h.</i> ♂ ad. sk.          | Futtehgurh, Dec., Jan.                           | Hume Coll.                 |
| <i>i.</i> Ad. sk.                  | Nepal.                                           | Hodgson Coll.              |
| <i>k.</i> Ad. sk.                  | Assam ( <i>McClelland</i> ).                     | India Museum.              |
| <i>l.</i> Ad. sk.                  | Assam.                                           | Godwin-Austen<br>Coll.     |
| <i>m.</i> ♀ ad. sk.                | Raipur, Jan.                                     | Hume Coll.                 |
| <i>n.</i> ♂ ad. sk.                | Lower Pegu, Sept. 15.                            | Oates Coll.                |
| <i>o, p, q.</i> Ad. et<br>juv. sk. | Penang ( <i>Dr. Cantor</i> ).                    | India Museum.              |
| <i>r.</i> Ad. sk.                  | Queensland.                                      | W. Westgarth, Esq.<br>[P.] |
| <i>s.</i> Imm. sk.                 | Queensland.                                      | Salvin-Godman Coll.        |
| <i>t.</i> Skeleton.                | India.                                           | Purchased.                 |
| <i>u.</i> Skeleton.                | —?                                               | Purchased.                 |

## 7. EPHIPPIORHYNCHUS.

Type.

*Ephippiorhynchus*, *Bp. Consp. Av.* ii. p. 106 (1855). . *E. senegalensis*.

*Range*. Confined to Africa.

### 1. *Ephippiorhynchus senegalensis*.

*Mycteria senegalensis*, *Shaw, Trans. Linn. Soc.* v. p. 35, pl. 3 (1798);  
*Lath. Ind. Orn. Suppl.* p. 64 (1801); *Vieill. N. Dict. d'Hist. Nat.*  
xvi. p. 440 (1817); *id. Gal. Ois.* ii. p. 139, pl. 255 (1825); *Less.*  
*Traité d'Orn.* p. 583 (1831); *Gray, List Grall. Brit. Mus.* p. 89  
(1844); *id. Gen. B.* iii. p. 562 (1848); *Reichenb. Grall. tab.* xciv.

- fig. 444 (1850); *Licht. Nomencl. Av. Mus. Berol.* p. 90 (1854: Senegal; Abyssinia); *Heugl. Syst. Uebers.* p. 61 (1856); *Hartl. Orn. W.-Afr.* p. 228 (1857: Gambia); *Cass. Proc. Acad. Nat. Sci. Philad.* 1859, p. 173 (Camma R.); *Gurney, Ibis*, 1862, p. 34 (Natal); *Kirk, Ibis*, 1864, p. 333 (Lake Nyasa; Rovuma R.); *Gurney, Ibis*, 1865, p. 275 (Natal); *Layard, B. S. Afr.* p. 317 (1867); *id. Ibis*, 1869, p. 376 (Matabele-land); *Cab. in Von der Decken's Reis., Vög.* iii. p. 43 (1869: Rovuma); *Finsch & Hartl. Vög. Ostaf.* p. 723 (1870); *Gray, Hand-l. B.* iii. p. 35, no. 10193 (1871); *Heugl. Orn. N.O.-Afr.* ii. p. 1110 (1873); *Reichen. J. f. O.* 1877, p. 167; *Bocage, Orn. Angola*, p. 452 (1881); *Holuh & Pelz. Beitr. Orn. Südaf.* p. 288 (1882); *Shelley, Ibis*, 1882, p. 365 (Mashoonaland); *Sharpe, ed. Layard's B. S. Afr.* p. 731 (1884); *Salvad. Ann. Mus. Genov.* (2) i. p. 258 (1884: Shoa); *Böhm, J. f. O.* 1885, p. 52 (Gonda), p. 73 (Qua-Mpara); *Fischer, t. c.* p. 118 (Kipini; Lamu Coast); *Ayres, Ibis*, 1886, p. 297 (Rustenberg distr., April); *Hartert, J. f. O.* 1886, p. 607 (Benue River); *Emin, Ibis*, 1887, p. 474 (Albert Nyanza); *Reichen. J. f. O.* 1887, p. 49 (Simiu R.; Ruwana R.); *Matschie, t. c.* p. 139 (Tanganvika), p. 146 (Itamba Lake; Boga; Lufra; Likulwe); *Reichen. J. f. O.* 1892, p. 11 (Victoria Nyanza); *id. Vög. deutsch-Ost-Afr.* p. 59 (1894); *Shelley, B. Afr.* i. p. 159 (1896).
- Senegal Jabiru, *Lath. Gen. Syn. Suppl.* ii. p. 296 (1801: Senegal).
- Ciconia ephippiorhyncha*, *Temm. Pl. Col.* v. Livr. 51 (1824); *Cretzschm. in Rüpp. Atlas, Vög.* p. 5, pl. 3 (1826); *Wagl. Syst. Ar.*, *Ciconia*, sp. 5. p. 137 (1827); *Des Murs in Lefebvre's Voy. Abyss.* p. 162 (1845).
- Ardea ephippiorhyncha*, *Harris, Highl. Æth.* ii. p. 417 (1844: Shoa.)
- Mycteria ephippiorhyncha*, *Rüpp. Syst. Uebers.* p. 122 (1845: Senaar; Abyssinia); *Heugl. Syst. Uebers.* p. 61 (1856).
- Ephippiorhynchus senegalensis*, *Bp. Consp. Av.* ii. p. 106 (1855); *Antin. Cat. descr. Ucc.* p. 102 (1864); *Gurney, in Anders. B. Dam. Ld.* p. 281 (1872).
- Ciconia senegalensis* (part.), *Schl. Mus. Pays-Bas, Ciconiæ*, p. 7 (1864: Senaar).
- Xenorhynchus senegalensis*, *Johnston, River Congo*, p. 370 (1884).

*Adult female.* General colour above white from the hind-neck to the rump, as well as the lesser marginal wing-coverts; scapulars and wing-coverts black, slightly glossed with green or purple; the greater coverts with more or less white on the inner webs; primary-coverts and quills for the most part white, ashy externally and at the ends, which are darker; the inner secondaries black, glossed with green and purple; upper tail-coverts and tail-feathers black with a greenish gloss, the base of the latter white: head and neck black, glossed with green and purple, especially on the throat; remainder of under surface, from the fore-neck downwards, white, including the under tail-coverts, thighs, quill-lining, and axillaries; under wing-coverts black: base of bill to nostril bright crimson, as also the skin round the eye and under the bill (the bill from the nostril for  $3\frac{1}{2}$  inches is black; from thence to the tip bright crimson); frontal shield bright yellow; shanks and tarsi black; knees and feet brick-dust red; the bare spot on the breast bright

crimson" (*T. Ayres*). Total length 65 inches, culmen 12·6, wing 27, tail 10·8, tarsus 15.

*Young*. Differs from the adult in being browner where the old bird is black; the white of the mantle and chest washed with brown.

*Hab.* Africa.

|                       |                                            |                        |
|-----------------------|--------------------------------------------|------------------------|
| a, b. Ad. et juv. sk. | Gambia.                                    | Governor Rendall [P.]. |
| c. Ad. (head only).   | River Loge, Ambriez, Angola (J. J. M.).    | Monteiro Coll.         |
| d. ♀ ad. sk.          | Rustenberg, Transvaal, April 2 (W. Lucas). | Guruey Coll.           |
| e. Juv. sk.           | East Africa.                               | Capt. Wharton [P.].    |
| f. Ad. (head only).   | Shoa (Sir W. C. Harris).                   | India Museum.          |
| g, h. Skulls.         | Gambia.                                    | Purchased.             |

### 8. MYCTERIA.

*Mycteria*, Linn. *Syst. Nat.* i. p. 282 (1766)..... Type. *M. americana*.  
*Range*. Confined to South America.

#### 1. *Mycteria americana*.

*La Cigogne de la Guiane*, *Brisson Orn.* v. p. 373 (1760).

*Mycteria americana*, Linn. *Syst. Nat.* i. p. 282, pt. (1766); *Gm. Syst. Nat.* i. p. 616 (1788); *Shaw, Trans. Linn. Soc.* v. p. 83 (1798); *id. & Nodder, Nat. Misc.* pl. 469; *Vieill. N. Dict. d'Hist. Nat.* xvi. p. 437 (1817); *Less. Traité d'Orn.* p. 583 (1831); *Neuwied, Beitr. Naturg. Bras.* iv. p. 875 (1832); *Gray, List Grall. Brit. Mus.* p. 89 (1844); *Tach. & Cab. Faun. Peruan., Aves*, pp. 50, 208 (1845-46); *Hartl. Ind. Azara*, p. 22 (1847); *Gray, Gen. B.* iii. p. 562 (1848); *Cab. in Schomb. Reis. Guiana*, iii. p. 751 (1848); *Reichenb. Grall.* tab. xciv. fig. 443 (1850); *Bp. Consp. Av.* ii. p. 107 (1855); *Des Murs in Casteln. Expéd. Amér. Sud*, p. 79 (1855: Araguay); *Schl. Mus. Pays-Bas, Ciconiæ*, p. 11 (1864); *Salvin, Ibis*, 1865, p. 197, 1866, p. 196 (Guatemala); *Gray, Hand-l. B.* iii. p. 35, no. 10190 (1871); *Pels. Orn. Bras.* pp. 305, 456 (1871: Parana; Cuyaba; Borba); *Sci. & Salv. Nomencl. Av. Neotr.* p. 126 (1873); *Reichen. J. f. O.* 1877, pp. 166, 276; *Baird, Brewer, & Ridgw. Water-Birds N. Amer.* i. p. 79, cum fig. (1884); *Coues, Key N. Amer. B.* 2nd ed. p. 653 (1884); *Tacz. Orn. Pérou*, iii. p. 411 (1886); *Salvin, Ibis*, 1886, p. 171 (British Guiana); *Berlepsch, J. f. O.* 1887, p. 32 (Pilcomayo); *Ridgw. Man. N. Amer. B.* p. 126 (1887); *Sci. & Huds. Argent. Orn.* ii. p. 106 (1889); *Graham Kerr, Ibis*, 1892, p. 145 (Rio Parana; Rio Paraguay; Rio Pilcomayo); *A. O. U. Checkl. N. Amer. B.* p. 69 (1895); *Underwood, Ibis*, 1896, p. 450 (Miravalles, Costa Rica); *Lloyd, Timchri*, (2) ix. p. 223 (1896); *Graham Kerr, Bull. Brit. Orn. Club*, vi. p. ix, (1896); *Koenigswald, J. f. O.* 1897, p. 388.

*Le Jabiru de Cayenne*, *D'Aubert. Pl. Enl.* viii. pl. 817.

*Le Jabiru*, *Buff. Hist. Nat. Ois.* vii. p. 280, pl. xiii. (1780).

*Americau Jabiru*, *Lath. Gen. Syn.* iii. pt. 1, p. 22, pl. lxxv. (1785).

*Baguari de la Collar Roxo*, *Azara, Apunt.* iii. p. 117 (1802).

*Ciconia mycteria*, *Licht. Verz. Doubl.* p. 76 (1823; San Paulo).

*Adult.* General colour above white, with a satiny gloss or a greyish shade under certain lights; under surface a little duller: "bill and feet black; iris brown" (*Stolzmann*). Total length 50 inches, culmen 12·5, wing 24, tail 7·8, tarsus 12.

*Hab.* South America, ranging into Central America.

|              |                                        |                       |
|--------------|----------------------------------------|-----------------------|
| a. Ad. st.   | South America.                         | Zoological Society.   |
| b. Ad. sk.   | South America.                         | India Museum.         |
| c. Ad. sk.   | South America.                         | Salvin-Godman Coll.   |
| d. Ad. sk.   | Brazil.                                | Lieut. Maw [P.].      |
| e. Ad. sk.   | Para.                                  | R. Graham, Esq. [P.]. |
| f. ♂ ad. sk. | Huamachal, Guatemala,<br>Feb. (O. S.). | Salvin-Godman Coll.   |

## 9. LEPTOPTILUS.

|                                                                                    | Type.                 |
|------------------------------------------------------------------------------------|-----------------------|
| <i>Leptoptilos</i> , <i>Lesson, Traité d'Orn.</i> p. 583 (1831) . . . .            | <i>L. javanicus</i> . |
| <i>Argala</i> , <i>Hodgs. Ind. Review</i> , ii. p. 563 (1838) . . . . .            | <i>L. dubius</i> .    |
| <i>Cranopelargus</i> , <i>Gloger, Handb. Naturg.</i> i. p. 417 (1842)              | <i>L. javanicus</i> . |
| <i>Osteorophea</i> , <i>Hodgs. in Gray's Zool. Misc.</i> p. 86<br>(1844) . . . . . | <i>L. dubius</i> .    |

*Range.* Africa. India, extending to the Indo-Malayan Sub-region.

*Key to the Species.*

- a. Larger: under tail-coverts silky white, with greyish-black streaks near the tips; wing-coverts like the back, the greater series and secondaries hoary grey, but without white margins . . . . . *dubius*, p. 315.
- b. Smaller: under tail-coverts pure white.
  - a'. Greater wing-coverts glossed with green like the rest of the wing, the scapulars and inner secondaries edged with white . . . . . *javanicus*, p. 317.
  - b'. Greater wing-coverts edged with white like the secondaries . . . . . *crueneniferus*, p. 319.

1. *Leptoptilus dubius*.

- Gigantic Crane, *Lath. Gen. Syn.* iii. pt. 1, p. 45 (1785: India & Africa).
- Ardea dubia*, *Gm. Syst. Nat.* i. p. 624 (1788).
- Ardea argala*, *Lath. Ind. Orn.* ii. p. 676 (1790).
- Ciconia marabou*, *Temm. Pl. Col.* v. pl. 300 (1824); *Wagl. Syst. Av.*, *Ciconia*, sp. 1, p. 135 (1827).
- Leptoptilos marabou*, *Less. Traité d'Orn.* p. 538 (1831).
- Ciconia dubia*, *Sundev. Phys. Sällsk. Tidskr.* 1838, p. 193 (Calcutta).
- Argala migratoria*, *Hodgs. Ind. Rev.* 1838, p. 563.
- Ciconia nudifrons*, *Jerd. Madr. Journ.* xii. p. 200, no. 317 (1840: Deccan).
- Ciconia argala*, *Jerd. tom. cit.* p. 200, no. 316 (Jaulnah).
- Osteorophea immigratoria*, *Hodgs. Icon. ined. in Brit. Mus., Grall.* pl. 74, 75, no. 713; *id. in Gray's Zool. Misc.* p. 86 (1844).
- Leptoptilus argala*, *Gray, List Grall. Brit. Mus.* p. 89 (1844: India; Northern India; Nepal); *id. Cat. Mamm. &c. Nepal pres. Hodgs.*

- p. 136 (1846); *id.* *Gen. B.* iii. p. 561 (1848); *Reichenb. Grall.* tab. xciv. fig. 448 (1848); *Blyth, Cat. B. Mus. As. Soc.* p. 277 (1849: Calcutta); *Licht. Nomencl. Av. Mus. Berol.* p. 90 (1854: East India); *Irby, Ibis*, 1861, p. 244 (Oudh); *Blyth, t. c.* p. 268; *Jerd. B. Ind.* iii. p. 730 (1864); *Schomb. Ibis*, 1864, p. 267 (Siam, Jan.); *Beavan, Ibis*, 1868, p. 396 (Calcutta); *Hayes Lloyd, Ibis*, 1873, p. 418 (Kathiawar); *Blyth, B. Burma*, p. 158 (1875: Arakan); *Garrod, P. Z. S.* 1875, p. 343 (anatomy); *Wardlaw Ramsay, Ibis*, 1877, p. 470 (Burmah); *Garrod, P. Z. S.* 1877, p. 711 (anatomy); *Hume & Davison, Str. F.* vi. p. 468 (1878: Tenasserim); *Bingham, op. cit.* vii. p. 30 (1878: Moulmein); *Davidson & Wenden, t. c.* p. 90 (Deccan); *Butler, t. c.* p. 187 (Sind); *Ball, t. c.* p. 229 (Ganges to Godavery); *Cripps, t. c.* p. 306 (Faridpur); *Butler, Cat. B. Sind etc.* p. 68 (1879: migrant); *Tiraut, Bull. Agric. Cochinchine*, (3) i. p. 153 (1879); *Hume, Str. F.* viii. pp. 70, 114 (1879: Malacca); *Bingham, Str. F.* ix. p. 197 (1880: Thoungyeen Valley); *Butler, t. c.* p. 432 (1881: Deccan); *Reid, Str. F.* x. p. 73 (1881: Lucknow); *Oates, t. c.* p. 242 (1882: Pegu); *Davidson, t. c.* p. 323 (Khandeish); *Kelham, Ibis*, 1882, p. 190 (Moar R., Malay Peninsula); *Oates, Handb. B. Brit. Burm.* ii. p. 262 (1883); *Weldon, P. Z. S.* 1883, pp. 640, 641, 652, pl. lix. fig. 3, pl. lx. fig. 6 (anatomy); *Beddard, P. Z. S.* 1884, p. 551 (anatomy); *Murray, Vertebr. Zool. Sind*, p. 206 (1884); *Swinh & Barnes, Ibis*, 1885, p. 135 (Mhow distr.); *Hume, Str. F.* viii. p. 330 (1888: Manipur); *Oates's ed. Hume's Nests & Eggs Ind. B.* iii. p. 260 (1890); *Munn, Ibis*, 1894, p. 70 (Calcutta distr.).
- Argala dubia*, *Bp. Consp. Av.* ii. p. 108 (1855).
- Mycteria argala*, *Schl. Mus. Pays-Bas, Ciconiæ*, p. 13 (1864: River Ganges).
- Leptoptilus dubius*, *Gray, Hand-l. B.* iii. p. 36, no. 10195 (1871); *Hume, Str. F.* i. p. 252 (1873: Upper Sind); *Adam, t. c.* p. 398 (Sambhur); *Hume, Nests & Eggs Ind. B.* p. 605 (1873); *Ball, Str. F.* ii. p. 432 (1874: Chota Nagpur); *Hume, t. c.* p. 483 (Tenasserim); *Salvad. Ucc. Born.* p. 357 (1874); *Oates, Str. F.* iii. p. 346 (1875).

*Adult.* General colour above ashy grey with a green reflection, the feathers being dull glossy green dusted with hoary grey; lesser and median wing-coverts like the back, the greater series externally hoary grey, as also the innermost secondaries; bastard-wing, primary-coverts, and quills blackish externally, glossed with dull green; tail-feathers blackish, also glossed with green; head and neck bare, extending down between the shoulders; sides of neck and under surface of body pure white; under tail-coverts composed of fine plumes which are silky white, streaked with greyish black towards the tips; under wing-coverts and quill-lining ashy with a slight greenish gloss; the lower aspect of the shafts of the long primaries curiously marked with brown: "bill pinkish flesh-colour; skin of head and chin pale reddish brown; skin of the forehead and at the base of the bill rough and blackish, presenting the appearance of having been scorched; neck saffron-yellow, turning to pink at the end of the pouch, the whole of which is spotted with black; loose skin at back of neck brick-red; iris

yellowish white; eyelids plumbeous, the edges pink; legs and toes brown, the edges of the reticulations white; claws black" (*E. W. Oates*). Total length 60 inches, culmen 12, wing 32, tail 12·5, tarsus 13.

*Young birds.* Browner than the adults, and having the band on the greater coverts brown instead of grey, with whitish edgings to the inner webs; the lores and face are not carunculated, and the back of the head and nape have a good many hairs and scattered black plumes; the gular pouch is very small and has a tuft of blackish hairs at the end: "bare skin of head, neck, and pouch pale flesh-colour spotted with black; chin and throat yellow, covered all over with long hairs; bill dirty yellow; legs and feet black; iris brown" (*C. T. Bingham*).

The dimensions of this species vary very much, especially as regards the length of the tarsus, and in young birds, where the characters which distinguish the adult are not always developed, it is by no means easy to tell the species. Thus in an adult bird from Cochin China with the grey band on the wing, showing that it is true *L. dubius*, the culmen is only 10·2 inches and the tarsus barely 10 inches in length.

*Hab.* Central and Northern India, east to the Burmese Provinces and Cochin China.

|                                             |                                                 |                    |
|---------------------------------------------|-------------------------------------------------|--------------------|
| a. Ad. st.                                  | India.                                          | Purchased.         |
| b. Ad. sk.                                  | India.                                          | Purchased.         |
| c. ♂ imm. sk.                               | Delhi, Sept. 18 ( <i>C. T. Bingham</i> ).       | Hume Coll.         |
| d. Imm. sk.                                 | Nepal.                                          | Hodgson Coll.      |
| (Type of <i>Osteorophea immigratoria</i> .) |                                                 |                    |
| e. Imm. sk.                                 | Bhotan Doars, Jan. ( <i>L. Mandelli</i> ).      | Hume Coll.         |
| f-i. ♂ ad. et<br>juv. sk.                   | Calcutta, Feb., Sept.                           | Hume Coll.         |
| k. Juv. sk.                                 | Tonghoo, Burma, Aug. 13 ( <i>R. G. W. R.</i> ). | Tweeddale Coll.    |
| l. Ad. sk.                                  | Cochin China.                                   | M. E. Pierre [P.]. |
| m. Skeleton.                                | Nepal.                                          | Hodgson Coll.      |

## 2. *Leptoptilus javanicus*.

*Ciconia javanica*, *Horsf. Trans. Linn. Soc.* xiii. p. 188 (1821).

*Ardea dubia* (*nec Gm.*), *Raffles, Trans. Linn. Soc.* xiii. p. 325 (1822).

*Ardea crinita*, *Buch. Hamilton, MSS.*

*Ciconia capillata*, *Temm. Pl. Col.* v. pl. 312 (1824: Java & Sumatra); *Wagl. Syst. Av.*, *Ciconia*, sp. 3, p. 136 (1827).

*Leptoptilos capillata*, *Less. Traité d'Orn.* p. 584 (1831: Java); *Licht. Nomencl. Av. Mus. Berol.* p. 90 (1854: East India).

*Ciconia nudifrons*, *McClelland, Ind. Rev.* 1838, p. 512.

*Ciconia cristata*, *McClelland, tom. cit.* p. 512.

*Ciconia calva*, *Jerd. Madr. Journ.* xii. p. 201, no. 318 (1840).

*Leptoptilus javanicus*, *Gray, List Grall. Brit. Mus.* p. 89 (1844: Indian Archipelago); *id. Gen. B.* iii. p. 561 (1848); *Reichenb. Grall. tab. xciv. fig. 446* (1848); *Blyth, Cat. B. Mus. As. Soc.* p. 277 (1849: Calcutta); *id. Ibis*, 1861, p. 269; *Reinh. Ibis*, 1862, p. 170; *Jerd. B. Ind.* iii. p. 732 (1864: Malabar Coast and Assam).

- to Malay Peninsula); *Beavan, Ibis*, 1868, p. 307 (Burma); *Swinh. Ibis*, 1870, p. 364 (Hainan); *id. P. Z. S.* 1871, p. 411; *Gray, Hand-l. B.* iii. p. 36, no. 10196 (1871); *Holden. P. Z. S.* 1872, p. 477 (Ceylon); *Hume, Nests & Eggs Ind. B.* p. 606 (1879); *Salvad. Ucc. Born.* p. 358 (1874); *Legge, Ibis*, 1875, p. 403 (Ceylon); *Hume, Str. F.* iii. p. 189 (1875: Pegu); *Blyth, B. Burma*, p. 150 (1875: Arakan); *David et Oustal. Ois. Chine*, p. 449 (1877); *Hume & Davidson, Str. F.* vi. p. 469 (1878: Amherst; Bankasoon); *Bingham, Str. F.* vii. p. 25 (1878); *Oates, t. c.* p. 51 (Pegu); *Davidson & Wenden, t. c.* p. 90 (Deccan); *Ball, t. c.* p. 230 (Ganges to Godavery); *Tiraut, Bull. Agric. Cochinchine*, (3) i. p. 153 (1879); *Hume, Str. F.* viii. p. 70 (Malacca); *id.* p. 114 (1879); *Sharpe, Ibis*, 1879, p. 272 (Borneo); *Butler, Cat. B. S. Bomb. Pres.* p. 111 (1880: seasonal visitant); *Hume, Str. F.* ix. p. 235 (1880); *Legge, B. Ceylon*, p. 1113 (1880); *Butler, Str. F.* ix. p. 432 (1881: Deccan); *Parker, t. c.* p. 483 (Ceylon, breeding); *Reid, op. cit.* x. p. 73 (1881: Lucknow); *Oates, t. c.* p. 243 (1882: Pegu); *Kelham, Ibis*, 1882, p. 190 (Larut River, Malay Peninsula); *Oates, Handb. B. Brit. Burma* ii. p. 263 (1883); *Nicholson, Ibis*, 1883, p. 257 (Lake Ranee, Sumatra, 1700 ft.); *Swinh. & Barnes, Ibis*, 1885, p. 135 (Nhow distr.); *Butrik, Notes Leyd. Mus.* ix. pp. 92, 96 (1887: Western Sumatra); *Hume, Str. F.* xi. p. 330 (1888: Manipur); *Oates's ed. Hume's Nests & Eggs Ind. B.* iii. p. 264 (1890); *Sharpe, Ibis*, 1890, pp. 148, 285 (Abai, N. Borneo); *Styan, Ibis*, 1891, pp. 327, 493 (Lower Yangtse); *Vorderm. Notes Leyd. Mus.* xiii. p. 130 (1891: Billiton).
- Leptoptilus nudifrons*, *Gray, Gen. B.* iii. p. 561 (1848).
- Leptoptilus cristatus*, *Gray, tom. cit.* p. 561.
- Argala javanica*, *Bp. Consp. Av.* ii. p. 108 (1855).
- Mycteria javanica*, *Schl. Mus. Pays-Bas, Ciconiæ*, p. 13 (1864: Java); *Suclien, in Veth's Midden-Sumatra, Vogels*, p. 51 (1887).
- Cranopelargus javanica*, *Ball, Str. F.* ii. p. 432 (1874: Manbhum); *Hume, t. c.* p. 483 (Tenasserim); *Heine & Reichen. Nomencl. Mus. Hein.* p. 312 (1890: E. India).

**Adult male.** Similar to *L. dubius*, but smaller and with a longer and more slender bill; distinguished also by the greater amount of green gloss in the plumage and the white margins to the scapulars and inner secondaries; the under tail-coverts are white, without any black at the ends, the greater wing-coverts are glossed with metallic green like the rest of the wing, so that there is no grey band as in *L. dubius*: "bill dirty yellowish; bare top of head dirty green; nude face and neck much tinged with yellow, and at seasons with red; legs dusky black; iris whitish" (*T. C. Jerdon*). Total length 45 inches, culmen 10.3, wing 23, tail 9.3, tarsus 9.

**Adult female.** Similar to the male: "bill pale grey; legs and feet nearly blue-black; iris bluish grey" (*H. O. Forbes*). Total length 45 inches, culmen 10.5, wing 48, tail 10.3, tarsus 9.8.

**Young.** With the hind part of the head thickly covered with brown hair and a few black feathers; no sign of white edgings to the scapulars and secondaries. I am by no means certain that these white margins to the scapulars and inner secondaries are not signs of the breeding dress, as they are absent in many examples which are apparently adult, and are never present in young birds.



*Hab.* Central and Southern India and Ceylon; eastward through the Burmese Provinces to Southern China and Hainan, and south to Malacca, Java, Sumatra and Borneo.

|                       |                                                 |                                     |
|-----------------------|-------------------------------------------------|-------------------------------------|
| a. Juv. sk.           | Madras.                                         | Dr. Jerdon [P.].                    |
| b. Ad. sk.            | Calcutta ( <i>E. Blyth</i> ).                   | India Museum.                       |
| c. Ad. sk.            | Darjeeling.                                     | Hume Coll.                          |
| d. Juv. sk.           | Pegu, Feb.                                      | Oates Coll.                         |
| e. Ad. sk.            | Tonghoo, Burma, July<br>( <i>R. G. W. R.</i> ). | Tweeddale Coll.                     |
| f. ♂ ad. sk.          | Amherst, March 4 ( <i>W. Davison</i> ).         | Hume Coll.                          |
| g. Ad. sk.            | Bankasoon, Feb. 20 ( <i>W. D.</i> ).            | Hume Coll.                          |
| h. Ad. sk.            | Cochin China.                                   | M. E. Pierre [P.].                  |
| i. Juv. sk.           | Province Wellesley ( <i>Dr. Cantor</i> ).       | India Museum.                       |
| k. Ad. sk.            | Malacca ( <i>Dr. Maingay</i> ).                 | Tweeddale Coll.                     |
| l, m. Ad. et juv. sk. | Malacca.                                        | India Museum.                       |
| n. Ad. sk.            | Malacca.                                        | Pinwill Coll.                       |
| o, p. Ad. sk.         | Singapore.                                      | Lord Ellenborough [P.].             |
| q. Ad. sk.            | Lake Ranau, Sumatra ( <i>H. O. Forbes</i> ).    | F. Nicholson Esq. [P.].             |
| r. Ad. sk.            | Java ( <i>Dr. Horsfield</i> ).                  | India Museum.<br>(Type of species.) |
| s. ♂ ad. sk.          | Java.                                           | Salvin-Godman Coll.                 |
| t. ♀ ad. sk.          | Baram, Sarawak.                                 | Charles Hose, Esq. [C.].            |
| u, v. Skeletons.      | Java.                                           | Purchased.                          |

### 3. *Leptoptilus crumeniferus*.

Gigantic Crane, *Lath. Gen. Syn.* iii. pt. 1, p. 45 (1785, pt.).

*Ardea dubia* (pt.), *Gm. Syst. Nat.* i. p. 624 (1788).

*Ciconia argala* (*nec Lath.*), *Temm. Pl. Col.* v. pl. 301 (1824: Senegal; River Nile); *Wagl. Syst. Av.*, *Ciconia*, sp. 2, p. 136 (1827).

*Ciconia marabou* (*nec Temm.*), *Denham & Clapperton, Travels in Africa*, ii. App. p. 203 (1826); *Chapm. Trav. S. Afr.* ii. App. p. 418 (1868).

*Ciconia crumenifera*, *Cuv. Mus. Paris, teste Less. Traité d'Orn.* p. 585 (1831).

*Leptoptilos crumenifera*, *Less. Traité d'Orn.* p. 585 (1831); *Gray, List Grall. Brit. Mus.* p. 89 (1844); *id. Gen. B.* iii. p. 561 (1848); *Reichenb. Grall.* tab. xciv. fig. 448 (1848); *Hartl. Orn. W.-Afr.* p. 228 (1857: Gambia; Guinea); *Cass. Proc. Acad. Nat. Sci. Philad.* 1859, p. 173 (Camma R.); *Kirk, Ibis*, 1864, p. 333 (Zambesi); *Layard, B. S. Africa*, p. 316 (1867); *Murno, Zool. Garten*, 1868, p. 242 (N.E. Africa); *Gurney, Ibis*, 1868, p. 259 (Transvaal); *Finsch & Hartl. Vög. Ostaf.* p. 725 (1870); *Gray, Hand-l. B.* iii. p. 36, no. 10194 (1871); *Gurney in Anderss. B. Dam. Ld.* p. 282 (1872: Ondonga, Damara-land; Lake N'gami); *Heugl. Orn. N.O.-Afr.* ii. p. 1114 (1873); *Garrod, P. Z. S.* 1873, pp. 467, 637 (anatomy); *Antin. & Salvad. Viagg. Bogos*, p. 151 (1873: Barka); *Garrod, P. Z. S.* 1874, p. 250 (anatomy); *Reichen. J. f. O.* 1877, p. 164; *Garrod, P. Z. S.* 1874,

- p. 711 (anatomy); *Fischer, J. f. O.* 1879, p. 296; *Max Schmidt, P. Z. S.* 1880, p. 316 (duration of life); *Bocage, Orn. Angola*, p. 453 (1881: Louanda); *Böhm, J. f. O.* 1882, p. 190 (Kakoma); *Holub & Pelz. Beitr. Orn. Südafr.* p. 287 (1882); *Shelley, Ibis*, 1882, p. 365 (Umvuli River); *Johnston, River Congo*, i. p. 370 (1884); *Fischer, Zeitschr. ges. Orn.* i. p. 384 (1884: Massai-land); *Sharpe, ed. Layard's B. S. Afr.* p. 734 (1884); *Salvad. Ann. Mus. Genov.* (2) i. p. 275 (1884: Shoa); *Fischer, J. f. O.* 1885, p. 117 (Ngua, Tana R.; Sigerari; Lamu; Wapokomoland); *Hartert, J. f. O.* 1886, p. 607 (River Niger); *W. Ayres, Ibis*, 1887, p. 63 (Transvaal); *Reichen, J. f. O.* 1887, p. 49 (Serian; Schasche Karatschongo); *Matschie, t. c.* p. 146 (Lufra; Upamba Lake); *Salvad. Ann. Mus. Genov.* (2) vi. p. 315 (1888: Kagima); *Heine & Reichen, Nomencl. Mus. Hein.* p. 312 (1890: Chartoum); *Rendall, Ibis*, 1892, p. 227 (Gambia); *Shelley, Ibis*, 1894, p. 477 (Nyasaland).  
*Ciconia vetula, Sunder. Phys. Sällsk. Tidskr.* 1838, p. 195 (Africa).  
*Leptoptilus argala (nec Lath.)*, *Rupp. Syst. Uebers.* p. 122 (1845: Nubia & Abyssania); *Vierth. Naumannia*, ii pp. 32, 56 (1852: Chartoum); *Heugl. Syst. Uebers.* p. 61 (1856); *Reichen, J. f. O.* 1892, p. 11 (Victoria Nyanza); *id. Vog. deutsch-Ost-Afr.* p. 58, fig. 30 (1894: Kakoma; Ugogo; Ugalla; Massailand); *Shelley, B. Africa*, i. p. 159 (1896).  
*Leptoptilus ruppellii*, *Vierth. Naumannia*, 1852, pt. 2, p. 56 (Chartoum); *Reichen, J. f. O.* 1877, p. 165; *Shelley, B. Africa*, i. p. 159 (1896).  
*Argala crumenifera*, *Bp. Consp. Av.* ii. p. 107 (1855); *Antin. Cat. descr. Ucc.* p. 102 (1864).  
*Mycteria crumenifera*, *Schl. Mus. Pays-Bas, Ciconiæ*, p. 12 (1864).

*Adult.* Similar to *L. javanicus* and having white under tail-coverts like that species, the plumes, however, being slightly more woolly; the bill is larger than that of *L. javanicus*, and the species can be distinguished by the white edges to all the greater coverts as well as the secondaries: "bill dirty green; legs black, but covered with fine ashy powder; a patch of yellow skin at the back of the neck, where it joins the body" (*W. Ayres*). Total length about 40 inches, culmen 10.8, wing 29, tail 11.8, tarsus 11.

*Young birds* have a smaller bill and have the hind part of the head, neck, and throat more or less clothed with hair-like down and a few black feathers; the greater coverts and secondaries are edged with light brown or whity brown, much less pronounced than in the adults.

*Hab.* Africa.

|              |                                   |                    |
|--------------|-----------------------------------|--------------------|
| a. Juv. sk.  | Africa.                           | Old Coll.          |
| b. Ad. st.   | Africa.                           | Purchased.         |
| c. Juv. sk.  | River Niger.                      | Dr. Baillie [P.].  |
| d. Ad. sk.   | Palombi River, Nyasa-land,        | Sir H. H. Johnston |
|              | Sept.                             | [P.].              |
| e, f. Ad. et | Shoa ( <i>Sir W. C. Harris</i> ). | India Museum.      |
| imm. sk.     |                                   |                    |
| g. Skeleton. | Africa.                           | Purchased.         |

## Sub-family TANTALINÆ.

## Key to the Genera.

- a. Crown, throat, and neck all round bare,  
the latter covered with rugose or scurvy  
scales; crown smooth ..... 10. TANTALUS, p. 321.  
b. Crown, throat, and face bare, but not the  
neck ..... [p. 323.  
11. PSEUDOTANTALUS,

## 10. TANTALUS.

|                                                                         | Type.                 |
|-------------------------------------------------------------------------|-----------------------|
| <i>Tantalus</i> , Linn. <i>Syst. Nat.</i> i. p. 240 (1766).....         | <i>T. loculator</i> . |
| <i>Tantalides</i> , Reichenb. <i>Av. Syst. Nat.</i> p. xiv (1852-53) .. | <i>T. loculator</i> . |
| <i>Tantalops</i> , Coues, <i>Key N. Amer. B.</i> 2nd ed. p. 653 (1884)  | <i>T. loculator</i> . |

*Range.* Confined to America.

1. *Tantalus loculator*.

Wood Pelican, Catesby, *Nat. Hist. Carol.* i. p. 81, pl. 81 (1731).

Le Grande Courly d'Amérique, Briss. *Orn.* v. p. 335 (1760).

*Tantalus loculator*, Linn. *Syst. Nat.* i. p. 240 (1766); *Gm. Syst. Nat.* i. p. 647 (1788); Wilson, *Amer. Orn.* viii. p. 39, pl. 66. fig. 1 (1814); Stephens in Shaw's *Gen. Zool.* xii. p. 3, pl. i. (1824); Audub. *B. Amer.* pl. ccxvi. (c. 1826); Wagl. *Syst. Av.* *Tantalus*, p. 30, sp. 1 (1827); Jard. ed. Wilson's *Amer. Orn.* iii. p. 60, pl. 66. fig. 1 (1832); Neuwied, *Beitr. Naturg. Bras.* iv. p. 682 (1832); Audub. *Orn. Biogr.* iii. p. 128 (1835); Bp. *Comp. List B. Eur. & N. Amer.* p. 48 (1838); D'Orbign. in Ramon de la Sagra, *Hist. Nat. Cuba, Ois.* p. 219 (1839); Audub. *B. Amer.* 8vo., vi. p. 64, pl. 361 (1843); Gray, *List Grall. Brit. Mus.* p. 90 (1844); Tschudi & Cab. *Faun. Peruan., Aves*, pp. 50, 298 (1845-46: Prov. Maynas); Gray, *Gen. B.* iii. p. 564 (1847); Hartl. *Ind. Azara*, p. 22 (1847); Denny, *P. Z. S.* 1847, p. 39 (Jamaica); Reichenb. *Grall. tab.* 147. fig. 2327 (1846); Cab. in Schomb. *Reis. Guian.* iii. p. 756 (1848); Bp. *Consp. Av.* ii. p. 149 (1855); Burm. *Th. Bras.* iii. p. 420 (1856); Gundl. *J. f. O.* 1856, p. 348 (Cuba); Cass. in Baird's *B. N. Amer.* p. 682 (1858); *Scl. & Salv. Ibis*, 1859, p. 227 (Guatemala); Brewer, *Proc. Bost. Soc. N. H.* vii. p. 308 (1860: Cuba); G. C. Taylor, *Ibis*, 1860, p. 313 (Honduras); Gundl. *J. f. O.* 1862, p. 83 (Cuba); Schl. *Mus. Pays-Bas, Ciconiæ*, p. 17 (1864); Salrin, *Ibis*, 1865, p. 193 (Guatemala); Dresser, *Ibis*, 1866, p. 32 (S. Texas); Coues, *t. c.* p. 262 (Arizona); Gundl. *Rep. Fisico-Nat. Cuba*, i. p. 351 (1866); *Scl. & Salv. P. Z. S.* 1866, p. 199 (Upper Ucayali); Gray, *Hand-l. B.* iii. p. 38, no. 10206 (1871); Allen, *Bull. Harv. Coll.* ii. p. 360 (1871); Pelz. *Orn. Bras.* pp. 305, 456 (1871: Rio Parana; Cuyaba; Villa Maria; Caiçara; Barra do Rio Negro); Coues, *Key N. Amer. B.* p. 263 (1872); *Scl. & Salv. Nomencl. Av. Neotr.* p. 126 (1873); *id.* *P. Z. S.* 1873, p. 305 (Upper Ucayali & Santa Cruz); Coues, *B. N.-West*, p. 513 (1874); Ridgw. *Ann. Lyc. N. Y.* x. p. 385 (1874: Illinois); Gundl. *J. f. O.* 1875, p. 313; *id.* *Orn. Cubana*, p. 162 (1876); Lawr. *Bull. U.S. Nat. Mus.* iv. p. 48 (1876); Reichen. *J. f. O.* 1877, p. 161; Garrud, *P. Z. S.* 1878, p. 625, fig. 1 (anatomy); Merrill, *Proc. U.S. Nat. Mus.* i. p. 162 (1878); Maynard, *B. East. N. Amer.* p. 404 (1879: Florida); Ridgw. *Proc. U. S. Nat. Mus.* iii. p. 197 (1880);

- Nutting, Proc. U.S. Nat. Mus.* v. p. 407 (1882: Costa Rica); *Belding, t. c.* pp. 545, 548 (Lower California); *Ridgw. t. c.* p. 550; *Nutting, Proc. U.S. Nat. Mus.* vi. p. 379 (1883: Nicaragua); *Berlepsch, Ibis*, 1884, p. 430 (Angostura); *Barrows, Auk*, i. p. 273 (1884: Entrerios); *Baird, Brewer, & Ridgw. Water-Birds N. Amer.* i. p. 81 (1884); *Tacz. & Berl. P. Z. S.* 1835, p. 119 (Babahoyo); *Drew, Auk*, ii. p. 18 (1885: Colorado); *Fisher, t. c.* p. 221 (New York); *Goss, t. c.* p. 311 (Kansas); *Ferrari Perez, Proc. U.S. Nat. Mus.* ix. p. 171 (1886: Vera Cruz); *A. O. U. Checklist N. Amer. B.* p. 133 (1886); *Tacz. Orn. Pérou*, iii. p. 414 (1886); *Salvin, Ibis*, 1886, p. 171 (British Guiana); *Scott, Auk*, iii. p. 385 (1886: Arizona); *Cooper, Auk*, iv. p. 90 (1887: Ventura Co., California); *Cory, t. c.* p. 320, *Ridgw. Man. N. Amer. B.* p. 125 (1887); *Beckh, Proc. U.S. Nat. Mus.* x pp. 636, 648 (1888: Bexar Co., Texas); *Scl. & Huds. Arg. Orn.* ii. p. 108 (1889); *Scott, Auk*, vi. p. 10 (1889: Florida, resident); *Everm. t. c.* p. 186 (Indiana); *Pindar, t. c.* p. 312 (Kentucky); *Salvin, Ibis*, 1889, p. 376 (Cozumel Isl.); *Cory, B. West Ind.* p. 241 (1889); *id. Cat. B. West Ind.* p. 89 (1892); *Graham Kerr, Ibis*, 1892, p. 145 (Pill-comayo); *Scott, Auk*, ix. p. 9 (1892: Jamaica), p. 211 (Florida); *Hasbrouck, Auk*, x. p. 91 (1893: Washington, D.C.); *Brimley, t. c.* p. 243 (N. Carolina); *Dutcher, t. c.* p. 206 (Long. Isl.); *Wayne, t. c.* p. 337 (Suwanee R.); *Richmond, Proc. U.S. Nat. Mus.* xvi. p. 527 (1894: Nicaragua); *Aplin, Ibis*, 1894, p. 199 (Arroyo Grande Uruguay, breeding); *Wayne, Auk*, xii. p. 364 (1895: Florida breeding); *A. O. U. Check-list N. Amer. B.* 2nd ed. p. 69 (1895); *Ridgw. Man. N. Amer. B.* 2nd ed. p. 125 (1896); *Brunner, Rep. Nebr. Hort. Soc.* 1896 (Nebraska), *teste Chapman, Auk*, xiii. p. 245; *Brewster, Auk*, xiii. p. 341 (1896: Bristol Co., Massachusetts); *Palmer, Auk*, xiv. p. 209 (1897: Virginia & Maryland).
- Le Curicaca de Cayenne, D'Aubert, Pl. Enl.* viii. pl. 868.
- Wood Ibis, Lath. Gen. Syn.* iii. pt. 1, p. 104 (1785); *Nuttall, Man. N. Amer. B.* ii. p. 82 (1840).
- Cangui, Azara, Ajunt.* iii. p. 122 (1803).
- Ibis nandapoa, Vieill. N. Dict. d'Hist. Nat.* xvi. p. 20 (1817); *id. Enc. Méth.* iii. p. 1149 (1823).
- Tantalus plumicollis, Spir, Av. Bras.* ii. pl. lxxxv. (1824).
- Tantalops loculator, Coues, Key N. Amer. B.* 2nd ed. p. 653 (1884).

**Adult male.** General colour above pure white, including the wing-coverts and inner secondaries; bastard-wing, primary-coverts, and quills black, with a bronzy-green gloss; tail-feathers black, glossed with purplish or bronzy green; head and neck all round bare; remainder of under surface of body from the fore-neck downward pure white, including the under wing-coverts and axillaries, which have a rich tinge of creamy buff: "head and upper part of neck bare and of a livid bluish colour, tinged with yellowish on the forehead; bill yellowish; legs blue, becoming blackish on the toes, and tinged with yellow on the webs" (*E. Coues*); "iris deep brown" (*J. J. Audubon*). Total length 42 inches, culmen 9.4, wing 19.7, tail 6.2, tarsus 8.3.

**Young.** Greyer than the adult, the head and neck feathered, the feathers on the nape and hind-neck dusky brown.

**Hab.** Southern United States to South America as far as Argentina. Accidental in the Central and Eastern United States.

|                                         |                                                                         |                     |
|-----------------------------------------|-------------------------------------------------------------------------|---------------------|
| a. Juv. sk.                             | Mount City, Illinois, Aug. 3<br>( <i>E. W. Nelson: Hensh. Coll.</i> ).  | Salvin-Godman Coll. |
| b. ♀ ad. sk.                            | Corpus Christi, Texas, July<br>( <i>F. B. Armstrong</i> ).              | Salvin-Godman Coll. |
| c. ♂ ad.; d, e, f.<br>♀ ad. et juv. sk. | Tarpon Springs, Florida, Aug.<br>Sept., Dec. ( <i>W. E. D. Scott</i> ). | Salvin-Godman Coll. |
| g. ♀ juv. sk.                           | Presidio, Mexico, Jan. 11<br>( <i>A. Forrer</i> ).                      | Salvin-Godman Coll. |
| h. Ad. sk.                              | San Blas, Tepic, May ( <i>W. B. Richardson</i> ).                       | Salvin-Godman Coll. |
| i, k. Ad. et juv.<br>sk.                | Cozumel Island ( <i>G. F. Gaumer</i> ).                                 | Salvin-Godman Coll. |
| l, m. Ad. et juv.<br>sk.                | Coban, Guatemala, Jan. ( <i>O. S.</i> ).                                | Salvin-Godman Coll. |
| n. Juv. sk.                             | Huamachal, Guatemala ( <i>O. S.</i> ).                                  | Salvin-Godman Coll. |
| o, p. Ad. st.                           | South America.                                                          | Purchased.          |

## 11. PSEUDOTANTALUS.

Type.

*Pseudotantalus*, *Ridgway, Proc. U.S. Nat. Mus.* v. p. 550  
(1883) ..... *P. ibis*

*Range.* Africa. India, to China, and south to the Malayan Peninsula, Java, and Sumatra.

*Key to the Species.*

- a. Upper wing-coverts black with white tips, only the greater series white; secondaries rosy; a black patch across the lower breast; under wing-coverts and axillaries black, tipped with white ..... *leucocephalus*, p. 323.
- b. Upper wing-coverts white or grey or brown, not black.
  - a'. Under wing-coverts white.
    - a''. No rosy markings on the upper or under wing-coverts ..... *cinereus* ad., p. 326.
    - b''. Upper and under wing-coverts with rosy markings ..... *ibis* ad., p. 327.
  - b'. Under wing-coverts brown ..... *cinereus* juv., p. 326.  
*ibis* juv., p. 327.

1. *Pseudotantalus leucocephalus*.

*Tantalus leucocephalus*, *Forst. Ind. Zool.* p. 20, pl. 10 (1781); *Gm. Syst. Nat.* i. p. 649 (1788); *Vieill. N. Dict. d'Hist. Nat.* viii. p. 298 (1817); *Cuv. Règne Anim.* i. p. 481 (1817); *Stephens in Shaw's Gen. Zool.* xii. p. 2 (1824); *Wagl. Syst. Av.* *Tantalus*, sp. 2, p. 131 (1827); *Less. Traité d'Orn.* p. 582 (1831); *Sykes, P. Z. S.* 1832, p. 160 (Deccan); *Vieill. Gal. Ois.* ii. p. 125, tab. 247 (1834); *Jerd. Madr. Journ.* xii. p. 202, no. 322 (1840); *Gray, List Grall. Brit. Mus.* p. 90 (1844: Nepal; Northern India); *id. Cat. Mamm. etc. Nepal pres. Hodgs.* p. 136 (1846); *id. Gen. B.* iii. p. 564 (1847); *Reichenb. Grall.* tab. lxxxv. figs. 518, 519 (1848); *Blyth, Cat. B. Mus. As. Soc.* p. 275 (1849 Calcutta); *Licht. Nomencl. Av. Mus. Berol.* p. 90 (1854); *Bp.*

*Consp. Av.* ii. p. 150 (1855); *Gould, B. Asia*, vii. pl. 59 (1862); *Jerd. B. Ind.* iii. p. 761 (1864); *Schl. Mus. Pays-Bas*, Ciconiæ, p. 17 (1864: Madras; Ceylon); *Blyth, Ibis*, 1867, p. 173 (Tavoy R., Tenasserim); *Beavan, Ibis*, 1868, p. 398 (Moulmein); *Swinh. P. Z. S.* 1871, p. 411 (Amoy); *Gray, Hand-l. B.* iii. p. 38, no. 10207 (1871); *Holldsw. P. Z. S.* 1872, p. 478 (Ceylon); *Hayes Lloyd, Ibis*, 1873, p. 419 (Kathiawar); *Hume, Nests & Eggs Ind. B.* p. 626 (1873); *Adam, Str. F.* i. p. 309 (1873: Sambhur Lake); *Ball, Str. F.* ii. p. 435 (1874: Chotia Nagpur); *Hume, t. c.* p. 483 (Tavoy R.); *Legge, Ibis*, 1874, p. 32, 1875, p. 404 (Ceylon); *Blyth & Wald B. Burm.* p. 158 (1875: Arakan; Tonghoo); *Butler, Str. F.* iii. p. 441 (1875: near Ahmedabad); *id. op. cit.* iv. p. 24 (1876: Mount Abool); *Fairb. t. c.* p. 263 (Ahmednuggur); *Ball, Str. F.* v. p. 420 (1877: Jaipur; Raipur); *Reichen J. f. O.* 1877, p. 162; *David et Oust. Ois. Chine*, p. 452 (1877); *Hume & Davison, Str. F.* vi. p. 484 (1878: Thatone; Tavoy); *Davidson & Wenden, Str. F.* vii. p. 91 (1878: Deccan); *Murray, t. c.* p. 113 (Jeempoor, Sind, Sept.); *Butler, t. c.* p. 188 (E. Narra, breeding); *Ball, t. c.* p. 231 (Ganges to Godavery); *Cripps, t. c.* p. 309 (Faridpur); *Hume, t. c.* p. 491 (Calcutta), p. 507; *Butler, Cat. B. Sind etc.* p. 71 (1879); *Hume, Str. F.* viii. p. 114 (1879); *Doig, t. c.* p. 372 (Eastern Narra, breeding, Oct. & Nov.); *Newton, t. c.* p. 415; *Tirant, Bull. Agric. Cochinchine*, (3) i. p. 155 (1879); *Legge, B. Ceylon*, p. 1100 (1880); *Butler, Cat. B. S. Bomb. Pres.* p. 84 (1880: Deccan); *Vidal, Str. F.* ix. p. 91 (1880: South Konkan, not observed); *Parker, t. c.* p. 485 (1881); *Idid, op. cit.* x. p. 76 (1881: Lucknow, resident); *Simson, Ibis*, 1882, p. 93 (Megna River, breeding in the neighbourhood); *Davidson, Str. F.* x. p. 324 (1882: Khandeish, winter visitant); *Parker, Ibis*, 1883, p. 105 (Ceylon); *Oates, Handb. Brit. Burm.* ii. p. 267 (1883); *Murray, Vertebr. Faun. Sind*, p. 276 (1884: breeding, May to Aug.); *Macgregor, Str. F.* x. p. 442 (1887: Belgaum); *Hume, op. cit.* xi. p. 338 (1888: Sylhet); *Oates, ed. Hume's Nests & Eggs Ind. B.* iii. p. 220 (1890); *Slyan, Ibis*, 1891, pp. 327, 493 (Lower Yangtse, winter); *De La Touche, Ibis*, 1892, p. 490 (Foochow Coast & River Min, summer; Swatow, Sept.); *Munn, Ibis*, 1894, p. 68 (Calcutta distr., June).

White-headed Ibis, *Lath. Gen. Syn.* iii. pt. I. p. 116 (1785).

*Tantalus rodopteron* vel *leucocephalus*, *Hodys Icon. med. Brit. Mus.*, *Grall.* pl. 76. no. 800; *id. in Gray's Zool. Misc.* p. 86 (1844).

*Tantalus indicus*, *Cuv. teste Bp. Consp. Av.* ii. p. 150 (1855).

*Tantalus longimembris*, *Swinh. Ibis*, 1867, pp. 227-230 (Amoy); *Gray, Hand-l. B.* iii. p. 38, no. 10210 (1871).

*Pseudotantalus leucocephalus*, *Ridgw. Proc. U.S. Nat. Mus.* v. p. 551 (1883).

*Pseudotantalus longimembris*, *Ridgw. tom. cit.* p. 551.

*Adult female.* General colour above white, with a rosy-pink tinge on the rump and scapulars; lesser and median wing-coverts greenish black, with broad white ends to the feathers, producing a barred appearance; the greater coverts pure white, slightly tinged with pink; bastard-wing, primary-coverts, and quills black, externally glossed with steel-green; the innermost secondaries pinkish white, becoming beautiful deep pink on the edges and tips of the feathers; tail-feathers glossy greenish black, with a slight coppery shade; head and neck all round, excepting the basal parts



of the face, creamy white; remainder of under surface of body pure white; from the fore-neck downwards, across the breast a broad band of black feathers, broadly tipped with white, producing a barred appearance, the under wing-coverts and axillaries being similarly coloured; quills black below, glossed with metallic green: "bill and facial skin orange-yellow, plumbeous at the base of the bill; legs, toes, and claws brown; iris pale yellow" (*E. W. Oates*). Total length 40 inches, culmen 11, wing 19·5, tail 6, tarsus 9·6.

The specimen described is one in full plumage, killed in December on the Sambhur Lake by Mr. R. M. Adam. The white edges on the wing-coverts and breast-band appear to wear off and become obsolete. I can find no difference in the colouring of the sexes. A male measures 20·5 inches in the wing, culmen 10·5.

*Young.* Differ from the adults in having the mantle brown or ashy-grey, the lower back, rump, and upper tail-coverts white, the latter shaded with grey; the scapulars brown or grey like the mantle; lesser and median wing-coverts dark brown, the greater coverts ashy-grey; bastard-wing, primary-coverts, and quills black, with scarcely any metallic gloss; head and neck all round brown, streaked with pale centres to the feathers; under surface of body from the fore-neck downwards ashy grey, becoming whiter on the lower abdomen and pure white on the under tail-coverts; the breast dark slaty-grey, the axillaries and under wing-coverts darker, the latter inclining to blackish brown: "skin of the chin orange, turning to pinkish on the edge of the throat; facial skin and basal half of bill orange, terminal half dull yellowish brown; iris brown" (*E. W. Oates*).

*Hab.* Indian Peninsula to the Burmese Provinces and China.

|                                    |                                              |                                                     |
|------------------------------------|----------------------------------------------|-----------------------------------------------------|
| <i>a, b.</i> Ad. et imm.<br>st.    | Northern India.                              | Colonel Cobb [P.].                                  |
| <i>c, d.</i> ♀ ad. sk.             | Sambhur, Dec., Jan. ( <i>R. M. Adam</i> ).   | Hume Coll.                                          |
| <i>e.</i> Ad. sk.                  | Etawah.                                      | Hume Coll.                                          |
| <i>f, g.</i> ♂ ♀ ad. sk.           | Etawah distr., Jan. ( <i>A. Anderson</i> ).  | Hume Coll.                                          |
| <i>h.</i> Juv. sk.                 | Oudh, Jan.                                   | Hume Coll.                                          |
| <i>i.</i> Ad. sk.                  | Oudh.                                        | Pinwill Coll.                                       |
| <i>k, l.</i> Ad. et juv.<br>sk.    | Nepal.                                       | Hodgson Coll.                                       |
| <i>m, n.</i> ♂ ♀ ad.<br>sk.        | Raipur.                                      | (Types of <i>T. rhodopteron</i> .)<br>Hume Coll.    |
| <i>o.</i> Ad. sk.                  | Seoni, C. P.                                 | Hume Coll.                                          |
| <i>p, q.</i> Ad. sk.               | Burma ( <i>R. G. W. R.</i> ).                | Tweeddale Coll.                                     |
| <i>r, s, t.</i> Ad. et<br>imm. sk. | Pegu, Aug. ( <i>E. W. O.</i> ).              | Oates Coll.                                         |
| <i>u.</i> ♀ ad. sk.                | Tavoy River, April 29 ( <i>W. Davison</i> ). | Hume Coll.                                          |
| <i>v, w.</i> ♂ ♀ ad. sk.           | Thatone, Aug., Oct. ( <i>W. D.</i> ).        | Hume Coll.                                          |
| <i>x.</i> ♀ imm. sk.               | Shanghai, Nov.                               | J. Webb, Esq. [P.].                                 |
| <i>y.</i> Imm. sk.                 | Amoy, June 1866 ( <i>R. Swinhoe</i> ).       | Seebohm Coll. (Type<br>of <i>T. longimembris</i> .) |



|                    |                     |                     |
|--------------------|---------------------|---------------------|
| ♂. Skeleton.       | India.              | Zoological Society. |
| ♂'. Skeleton.      | Sultanpur, July 18. | India Museum.       |
| ♂'. Various bones. | Nepal.              | Hodgson Coll.       |
| ♂'-♀. Skulla.      | India.              |                     |

## 2. *Pseudotantalus cinereus*.

*Tantalus cinereus*, *Raffles*, *Trans. Linn. Soc.* xiii. p. 327 (1822: Sumatra); *Reichen. J. f. O.* 1877, p. 102.

*Tantalus lacteus*, *Temm. Pl. Col.* v. pl. 352 (1825: Java); *Wagl. Syst. Ar.* *Tantalus*, sp. 4, p. 132 (1827); *Less. Traité d'Orn.* p. 582 (1831: Java); *Gray, Gen. B.* iii. p. 564 (1847); *Reichenb. Grall.* tab. lxxxv. fig. 517 (1848); *Blyth, Cat. B. Mus. As. Soc.* p. 275 (1849); *Licht Nomencl. Mus. Berol.* p. 90 (1854: Java); *Schl. Mus. Pays-Bas, Ciconiæ*, p. 18 (1864: Java); *Jerd. B. Ind.* iii. p. 763 (1864); *Blyth, Ibis*, 1867, p. 173 (Siam); *Gray, Hand-l. B.* iii. p. 38, no. 10209 (1871); *Salvad. Ucc. Born.* p. 358 (1874); *Hume, Str. F.* viii. p. 71 (1879: Malacca); *Nicholson, Ibis*, 1883, p. 257 (Sumatra).

*Tantalus ibis*, var., *Raffles, tom. cit.* p. 327 (Sumatra).

*Pseudotantalus lacteus*, *Ridgw. Proc. U.S. Nat. Mus.* v. p. 551 (1883).

*Adult.* General colour above pure white, without any pinkish tinge anywhere; the whole of the wing-coverts, as well as the innermost secondaries, pure white; bastard-wing, primary-coverts, and quills black; tail-feathers black with a slight greenish gloss; feathers of the head and neck all round pure white, as well as the entire under surface of the body and the under wing-coverts and axillaries: "bill with yellow markings and blotches; point of upper and lower mandible pale white; eye-wattle grey; occiput grey; iris greyish brown" (*H. O. Forbes*). Total length 38 inches, culmen 10.8, wing 19.8, tail 6.6, tarsus 8.9.

*Young female.* Brown or ashy above; lower back, rump, and upper tail-coverts white; lesser and median wing-coverts brown, with white edges, the greater series pale ashy, edged with white; bastard-wing, primary-coverts, quills, and tail black; head and neck all round dark brown, with longitudinal centres of paler brown; remainder of under surface of body light grey, white on the abdomen and under tail-coverts: "bill and feet greenish grey; iris dark grey" (*H. O. Forbes*).

This is a decidedly smaller species than *P. leucocephalus*, and can be thus distinguished at all ages. A young male, according to Dr. Forbes, had "the bill marked and blotched near the base with yellow, the point of the lower mandible white; feet grey: bare part of head grey, the region of the eye also; iris greyish brown."

*Hab.* Malayan Peninsula to Java and Sumatra.

|                          |                                                                 |                         |
|--------------------------|-----------------------------------------------------------------|-------------------------|
| ♂, ♀, c. Ad. et imm. sk. | Penang ( <i>Dr. Cantor</i> ).                                   | India Museum.           |
| ♂, c. ♂ ad. sk.          | Acheen, Sumatra ( <i>W. Davison</i> ).                          | Hume Coll.              |
| ♀. ♀ juv. sk.            | Oelak Tanding, Sindang, Sumatra, Oct. 9 ( <i>H. O Forbes</i> ). | F. Nicholson, Esq. [P.] |

♂ ♂ juv. sk. River Rawas near Bagin Talok. F. Nicholson, Esq.  
Sumatra, Dec. 3. H. O. F. P.  
A. Skelton. Java. Purchased.

3. *Pseudotantalus ibis*.

L'His blanc. Brisson, Orn. 7 p. 349 (1780); Buff. Hist. Nat. Ois. viii. p. 14, pl. i. (1781).

*Tantalus ibis*, Linn. Syst. Nat. i. p. 341 (1758); Gm. Syst. Nat. i. p. 650 (1788); Vieill. N. Dougl. & Hist. Nat. viii. p. 290 (1817); Licht. Verz. Dougl. p. 73 (1821); Ninn. : Less. Ternit. i. Orn. p. 282, pl. 90, fig. 2 (1831); Rapp. Syst. Ternit. p. 122 (1845); Gray, Gen. B. iii. p. 364 (1847); Reichenö. Grall. tab. lxxiv. fig. 316 (1848); Licht. Nomencl. An. Mus. Berl. p. 90 (1854; Nubia); Bp. Comp. An. ii. p. 147 (1855); Houg. Syst. Übers. p. 61 (1856); Hartl. Orn. W.-Afr. p. 221 (1857; Senegambia); Cass. Proc. Acad. Nat. Sci. Philad. 1859, p. 174 (Canna River); Hartl. J. f. O. 1861, p. 270 (Bissau); Sch. Mus. Pryn-Bur. Ciconiæ, p. 18 (1864; Senegal; Senaar; Bissau; Antin. Cat. descr. Uce. p. 106 (1864; Senaar; Kari-lan; White Nile; Kirk. Ibis, 1864, p. 334 (Zambesi; Layard. E. S. Africa, p. 318 (1867; Nel's Poort); Cab. in Von der Decken's Reis. iii. Vog. p. 47 (1869; Osi River); Finckh & Hartl. Vog. Ostaf. p. 729 (1870; Gray, Hand-l. B. iii. p. 38, no. 10295 (1871; Gurney in Anders. B. Dam. Ld. p. 286 (1872; Shelley, B. Egypt, p. 262 (1872); Houg. Orn. N.O.-Afr. ii. p. 1129 (1873; N.E. Senaar to Nubia, rarely to Upper Egypt; Masow; Tigre; Demben Lake; 2800-6000 ft.); Garrod, P. Z. S. 1875, p. 297, fig. 1 (anatomy); Bouvier, Cat. Ois. Marche se. p. 37 (1875; Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 313 (1876; Landana; Boerge, J. f. O. 1876, p. 300 (Cunene River); Reichen. J. f. O. 1877, pp. 162, 276; Hartl. Vog. Madag. p. 315 (1877); Fischer & Reichen. J. f. O. 1878, p. 249 (Osi-Tana distr.); Oud. Nouv. Arch. Mus. (2) ii. Bull. p. 145 (1879; Ogowe R.); Fischer, J. f. O. 1879, p. 297 (Muniuni, April); Boerge, Orn. Angola, p. 454 (1881; Loango Coast and Angola; Rio Coroca; Quillengues; Humbe); Milne-Edwards & Grandid, Hist. Nat. Madag., Ois. p. 528 (1882; Madaga-car, between Cape St. André and Cape Ste. Marie); Forbes, P. Z. S. 1882, p. 352 (anatomy); Holub & Pelz. Beitr. Orn. Südaf. p. 200 (1882); Böhm, J. f. O. 1882, p. 190 (Kakoma); Fischer, Zeitschr. ges. Orn. i. p. 385 (1884; Masai-land); Salrad, Ann. Mus. Genov. (2) i. p. 230 (1884; Shoa); Fischer, J. f. O. 1885, p. 117 (Melindi; East Tana distr.; Salt swamps, Barawa); Schalow, J. f. O. 1886, p. 434; Hartert, t. c. p. 607 (Sambara and Sokoto); Reichen. J. f. O. 1887, p. 49 (Ruwana R.); Matschie, t. c. p. 146 (Upamba Lake); Salrad, Ann. Mus. Genov. (2) vi. p. 316 (1888; Lake Cialalaka); Tristram, Ibis, 1888, p. 203 (Rovuma River); Heine & Reichen. Nomencl. Mus. Hein. p. 313 (1890; Kartoum); Blaauw, Ibis, 1893, p. 465; Fleck, J. f. O. 1894, p. 386 (Damara-land); Reichen. Vog. Deutsch-Ost-Afr. p. 57 (1894; Bagamoyo; Tanga; Kingani; Tanganyika; Masai-land; Rovuma River); Kuschel, J. f. O. 1895, p. 91; Shelley, B. Africa, i. p. 160 (1896).

L'His blanc d'Egypte, D'Aubenton, Pl. Enl. viii. pl. 380.

Egyptian Ibis, Lath. Gen. Syn. iii. pt. 1, p. 111 (1785).

Numenius ibis, Pallas, Zoogr. Rosso-Asiat. ii. p. 165 (1811).

*Tantalus rhodinopterus*, Wagl. Syst. Av., *Tantalus*, sp. 3, p. 130 (1827).

*Tantalus longirostris*, *Brehm, Naumannia*, 1855, p. 290; *id. Vogelf.* p. 290 (1855).

*Pseudotantalus ibis*, *Ridgw. Proc. U.S. Nat. Mus.* v. p. 551 (1883); *Sharpe, ed. Layard's B. S. Afr.* p. 735 (1884); *id. Ibis*, 1892, p. 542 (Turquel River, Suk).

*Adult.* General colour above white with a rosy tinge, the wing-coverts and inner secondaries not only tinged with rose-colour but having a sub-terminal bar of crimson-lake, becoming almost blackish on the latter feathers; bastard-wing, primary-coverts, quills, and tail-feathers black, glossed with purplish bronze or metallic green on the primaries; head and neck all round white, as well as the under surface of the body, the under tail-coverts tinged with pink; axillaries white with a pinkish tinge; under wing-coverts white with a strong blush of crimson, deepening to rich crimson before the white tip, which is very conspicuous: "bare parts of face red, with a narrow border of yellow; bill golden yellow; feet brick-red, with the toes black; iris clear brown" (*A. Grandidier*). Total length 40 inches, culmen 9·8, wing 20, tail 7·3, tarsus 9.

*Young.* Distinguished by its brown back and wings as well as by the head and neck being brown all round: "bare part of face yellow" (*A. Grandidier*).

*Hab.* Africa and Madagascar.

|                                |                                       |                          |
|--------------------------------|---------------------------------------|--------------------------|
| <i>a.</i> Ad. st.              | West Africa.                          | Purchased.               |
| <i>b.</i> Juv. sk.             | Senegambia.                           | Governor Randall [C.].   |
| <i>c, d.</i> Ad. sk.           | River Niger.                          | Dr. Baikie [C.].         |
| <i>e.</i> Ad. et juv. sk.      | South Africa.                         | Purchased.               |
| <i>f, g.</i> ♀ ad. et juv. sk. | Cape Colony.                          | Sir A. Smith [C.].       |
| <i>h.</i> ♀ imm. sk.           | Transvaal ( <i>Ayres</i> ).           | Shelley Coll.            |
| <i>i.</i> Juv. sk.             | Zambesi ( <i>Bradshaw</i> ).          | Shelley Coll.            |
| <i>k.</i> Ad. sk.              | River Shiré ( <i>Sir J. Kirk</i> ).   | Livingstone Exped.       |
| <i>l.</i> Head, sk.            | Zambesi River ( <i>Sir J. Kirk</i> ). | Livingstone Exped.       |
| <i>m.</i> Juv. sk.             | N.E. Africa.                          | Purchased.               |
| <i>n, o.</i> Ad. et juv. sk.   | Wady Halfa, Upper Egypt.              | Surg.-Capt. Penton [P.]. |

## Order XVII. STEGANOPODES\*.

(By W. R. OGILVIE-GRANT.)

The various members of this Order (comprising the Cormorants, Darters, Gannets, Frigate-birds, Tropic-birds, and Pelicans) differ from all other birds in having the feet totipalmate—that is, with all the four toes united one to the other by a web.

The arrangement of the families of Steganopodes here adopted is for convenience, and is not meant to express relationship. *Phalacrocorax* is doubtless the most typical totipalmate of the group. Probably the most natural arrangement would be as follows:—Tropic-birds, Pelicans, Cormorants and Darters, Gannets, Frigate-birds.

### *Key to the Families.*

- I. Tail rounded or cuneate; web between toes not emarginate, or only slightly so.
  - A. Middle tail-feathers not greatly produced.
    - a. Bill sub-cylindrical and hooked at the extremity, or elongate and pointed; nostrils nearly obsolete. [p. 330. 1. **Phalacrocoracidæ**,
    - b. Bill sub-cylindrical and pointed; no external nostrils . . . . . 2. **Sulidæ**, p. 423.
    - c. Bill long and flattened; with external nostrils . . . . . 5. **Pelecanidæ**, p. 460.
  - B. Middle tail-feathers greatly produced; bill moderately long, laterally compressed and pointed; nostrils distinct, linear [p. 450. 4. **Phaëthontidæ**,
- II. Tail deeply forked; web between toes deeply emarginate . . . . . 3. **Fregatidæ**, p. 442.

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\* The following works refer to the osteology etc. of the Order:—Brandt, *Mém. Acad. St. Pétersb.* (6) v. pt. ii. pp. 81–196, pls. ii.–x. (1839); Shufeldt, *P. U. S. Nat. Mus.* xi. pp. 286–315 (1888) [osteology]; Bignon, *Mém. Soc. Zool. Fr.* ii. pp. 260–318, pls. xii. fig. 2, & xiii. (1889); Goodchild, *P. Phys. Soc. Edinb.* x. pt. 2, pp. 317–333, pl. xv. (1891); xii. pp. 171–181 (1894) [cubital coverts]; Shufeldt, *Ibis*, 1894, pp. 365 & 366 [fibula]; id. *P. Z. S.* 1894, pp. 160–162; Pycraft, *P. Z. S.* 1898, pp. 82–101, pls. vii., viii. [osteology].

## Family I. PHALACROCORACIDÆ.

Palatines broad and flat, closely approximated one to the other in the middle line from the posterior nares backwards. Postorbital process emarginate. Suprajugal well-developed (*Plotus*) or vestigial (*Phalacrocorax*). Furculum not fused with carina sterni. (*W. P. Pycraft.*)

### Key to the Sub-families.

- Bill sub-cylindrical and strongly hooked at the extremity; cutting-edges of mandibles entire. A large occipital style or nuchal bone articulating with the supra-occipital. 1. *PHALACROCORACINÆ*, [p. 330.  
 Bill elongate and pointed; cutting-edges of mandibles serrated. Occipital style feebly developed or represented by a fibrous raphe. . . 2. *PLOTINÆ*, p. 410.

### Sub-family I. PHALACROCORACINÆ.

Temporal muscles run back beyond the skull and are separated by a well-developed bony style.

Both carotid arteries present.

Skin not in the least emphysematous.

Covering of contour-feathers almost uninterrupted, being deficient only on the very narrow inferior space, in the region of the axilla, on the under surface of the arm, in the neighbourhood of the wing-membrane, on the inside of the tibia and on each side of the pelvis behind the thighs. Aftershaft wanting.

#### 1. PHALACROCORAX\*.

|                                                                                  | Type.             |
|----------------------------------------------------------------------------------|-------------------|
| <i>Phalacrocorax</i> , <i>Brisson</i> , <i>Orn.</i> vi. p. 511 (1760) . . . . .  | <i>P. carbo</i> . |
| <i>Carbo</i> , <i>Lacépède</i> , <i>Mém. l'Inst. Paris</i> , iii. p. 515 (1801); |                   |
| <i>Meyer &amp; Wolf</i> , <i>Taschenb. Deutsch. Vog.</i> ii. p. 576 (1810).      | <i>P. carbo</i> . |

\* The following works refer to the anatomy and osteology etc. of various species of *Phalacrocorax*.—*Brandt*, *Mém. Ac. St. Pétersb.* (6) v. pt. ii. pp. 82, 93, 127, 175, pls. ii., iii. (1839) [osteology of *P. carbo* and *P. pygmaeus*], *Hunter*, *Ess. Obs. Nat. Hist.* ii. p. 327 (1861) [anatomy and osteology, notes on *P. carbo*]; *Parker*, *P. Z. S.* 1863, p. 517 [vertebrae of *P. carbo*], *Huxley*, *P. Z. S.* 1867, p. 439 figs. [skull]; *Eyton*, *Osteol. Av.* p. 218, pl. 5 L (1867), *Nitzsch*, *Pteryx*, Engl. ed. p. 149 (1867), *Selenka*, *Bronn's Thier-reichs, Vog.* pl. viii. figs. 5, 6 (1869); *Garrod*, *P. Z. S.* 1873, p. 467 [both carotids present], p. 637, fig. 4 [muscles of

|                                                                                                                                                                                    | Type.                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <i>Halieus</i> , Illiger, <i>Prodromus</i> , p. 279 (1811) . . . . .                                                                                                               | <i>P. carbo</i> .         |
| <i>Gulosus</i> , Montagu, <i>Suppl. Orn. Dict.</i> p. 5 of Catalogue at end of vol. (1813) . . . . .                                                                               | <i>P. graculus</i> .      |
| <i>Carbonarius</i> , Rafinesque, <i>Analyse</i> , p. 72 (1815) ..                                                                                                                  | <i>P. carbo</i> .         |
| <i>Hydrocorax</i> , Vieillot ( <i>nec</i> Brisson, 1760), <i>Analyse</i> , p. 63 (1816); <i>id.</i> <i>Nouv. Dict. d'Hist. Nat.</i> viii. p. 82 (1817) . . . . .                   | <i>P. carbo</i> .         |
| <i>Graucalus</i> , G. R. Gray ( <i>nec</i> Cuvier, 1817), <i>List Gen. B.</i> ed. 2, p. 101 (1841); <i>id.</i> in <i>Dieffenb. Trav. N. Zeal.</i> ii. App. p. 201 (1843) . . . . . | <i>P. carbo</i> .         |
| <i>Graculus</i> , G. R. Gray, <i>Voy. Erebus &amp; Terror, Birds</i> , p. 19 (1845) . . . . .                                                                                      | <i>P. albiventer</i> .    |
| <i>Graculus</i> , Reichenb. <i>Nov. Synop. Av.</i> pl. cclxxviii. no. 2304 (1850) . . . . .                                                                                        | <i>P. javanicus</i> .     |
| <i>Hypoleucus</i> , Reichenb. <i>Nat. Syst. Vög.</i> p. vii (1852)                                                                                                                 | <i>P. hypoleucus</i> .    |
| <i>Stictocarbo</i> , Bonap. <i>C. R.</i> xli. p. 1115 (1855) . . . .                                                                                                               | <i>P. punctatus</i> .     |
| <i>Sticticarbo</i> , Bonap. <i>Consp. Av.</i> ii. p. 174 (1855) ..                                                                                                                 | <i>P. gaimardi</i> .      |
| <i>Urile</i> , Bonap. <i>Consp. Av.</i> ii. p. 175 (1855) . . . . .                                                                                                                | <i>P. bicristatus</i> .   |
| <i>Leucocarbo</i> , Bonap. <i>Consp. Av.</i> ii. p. 176 (1855) ..                                                                                                                  | <i>P. bougainvillii</i> . |
| <i>Microcarbo</i> , Bonap. <i>Consp. Av.</i> ii. p. 177 (1855) ..                                                                                                                  | <i>P. melanoleucus</i> .  |
| <i>Haliator</i> , Heine, <i>J. f. O.</i> 1860, p. 202 . . . . .                                                                                                                    | <i>P. pygmæus</i> .       |
| <i>Melanocarbo</i> , Bernst. <i>Dagboek</i> , p. 119 (1883) . . . .                                                                                                                | <i>P. melanoleucus</i> .  |

*P. carbo*]; Gulliver, *P. Z. S.* 1875, p. 488 [red blood-corpuscles in *P. carbo*]; Garrod, *P. Z. S.* 1875, p. 343 [plantar tendons, *P. carbo*]; 1876, pp. 335, 337, 339, 340, 345 [notes on anatomy]; Forbes, *P. Z. S.* 1877, p. 307 [Bursa Fabricii in *P. carbo* and *P. vigua*]; Mivart, *Tr. Z. S.* x. pt. vii. pp. 315–378, pls. lvii., lx. fig. 6, lxi. figs. 1–5 (1878) [axial skeleton]; Ewart, *J. Linn. Soc.* xv. p. 455 (1881) [shape of nostril in *P. carbo*]; Shufeldt, *Science*, ii. pp. 640–642, 822, figs. 1–3 (1883), iii. p. 143 (1884) [osteology of *P. bicristatus*]; Jeffries, *Science*, ii. p. 739 (1883) [corrections], iii. p. 59 (1884); *id.* *Auk*, i. p. 196 (1884) [occipital style]; Gill, *Science*, iii. p. 404 (1884); Coues, *Key N. Am. B.* 2nd ed. pp. 723–725, figs. 502, 504, 505 (1884) [osteology of *P. bicristatus*]; Olphe-Gall. *Ibis*, 1885, p. 234 [nostrils not connected with pharynx]; Beddard, *P. Z. S.* 1885, p. 843 [visceral anatomy of *P. carbo*]; *id.*, *P. Z. S.* 1892, p. 295 [osteology of *P. graculus*]; Shufeldt, *Ibis*, 1894, p. 365 [leg-bone, *P. bicristatus*]; Lucas, *Auk*, xiii. p. 172 (1896); xiv. p. 87 (1897) [skull of young in *Phalacrocorax*]; Anthony, *Auk*, xiv. p. 205 (1897) [nostril in young of *Phalacrocorax*].

#### Doubtful Species.

1. PHALACROCORAX ALBIDUS, Pallas, *Zoogr. Rosso-As.* ii. p. 305 (1811).

“Whitish grey, with a yellowish belly.”

Very common round Bering Island.

2. PHALACROCORAX LEUCURUS, Aud. *Orn. Biog.* v. p. 336 (1839).

Based on specimens seen by Townsend at Cape Disappointment. Possibly *P. pelagicus* in very worn plumage, with the tail-feathers brownish white.

3. PHALACROCORAX HUTTONI, Buller, *B. N. Zeal.* 2nd ed. ii. p. 174 (1888).

Like *P. varius*, but a little larger; above brownish, with the tips and margins of the wing-coverts paler brown; orange spot in front of the eye absent; feet dirty yellow. Total length 36 inches; wing from flexure 12.5; tail 6.0; bill along ridge 2.75, along the edge of lower mandible 3.75; tarsus 2.25; longest toe and claw 4.5. (Buller.)

The type, which was obtained near Dunedin in January 1876, and is preserved in the Otago Museum, appears from the description to be an immature specimen of *P. varius*.

|                                                                                                                              |                          |
|------------------------------------------------------------------------------------------------------------------------------|--------------------------|
|                                                                                                                              | Type.                    |
| <i>Compsalieuus</i> , <i>Ridgway</i> , in <i>Water-B. N. Amer.</i><br>ii. p. 145 (1884) [with 14 tail-feathers !!] . . . . . | <i>P. penicillatus</i> . |
| <i>Gripeus</i> , <i>Heine</i> , <i>Nomencl. Mus. Hein.</i> p. 352 (1890)                                                     | <i>P. graculus</i> .     |
| <i>Enygrothreres</i> , <i>Heine</i> , <i>Nomencl. Mus. Hein.</i> p. 353<br>(1890) . . . . .                                  | <i>P. punctatus</i> .    |

Bill long, or moderately long, sub-cylindrical, strongly hooked at the extremity; a long narrow groove on each side, dividing at the nail or dertrum; cutting-edges of mandibles entire. Nostrils rudimentary. A gular pouch, naked anteriorly; neck long and sinuous. Wings moderately long and pointed; quills stiff and strong, the third generally slightly longer than the first and second. Tail rounded or cuneate, composed of twelve or fourteen stiff feathers. Tarsus short and compressed; outer toe longest; claws curved, that of middle toe pectinate.

*Range.* Almost world-wide, but absent from the Central Pacific.

### Key to the Species.

#### I. Adult in Breeding-plumage.

- I. Culmen exceeding 1·5 inch in length from feathers on forehead to tip.
  - A. Tail composed of 14 feathers.
    - a. Breast and belly black glossed with dull green or blue; legs blackish.
      - a'. Size larger: wing more than 12 inches long.
        - a''. Fore-neck and chest black with bluish or greenish gloss; a large white patch on each flank.
          - a<sup>3</sup>. Feathers bordering the naked throat pure white; wing-coverts and scapulars bronze-brown margined with dark steel-blue; underparts with a dark bluish-green gloss . . . . . *carbo*, p. 340.
          - b<sup>3</sup>. Feathers bordering the naked throat white mottled with dark greenish black; wing-coverts and scapulars greenish bronze margined with dark green; underparts with an oil-green gloss. . . . . *filamentosus*, p. 350.
        - b''. Fore-neck and chest white, wing-coverts and scapulars bronze-brown margined with greenish black; flanks with scattered white plumes. . . . . *lucidus*, p. 351.
      - b'. Size smaller: wing less than 10·5 inches; underparts black glossed with dark blue; no white flank-patch . . . . . *capensis*, p. 352.
    - b. Breast and belly smoky grey; an elongate white patch on each side of the neck; legs coral-red (orange in dry skin) . . . . . *gaimardi*, p. 353.



**B. Tail composed of 12 feathers.**

- a.** General colour of the underparts smoky grey; two crests—one on the crown, a second on the nape; no white flank-patch.
- a'.** A broad white eyebrow-stripe continued down each side of the neck to the shoulder ..... *punctatus*, p. 354.
- a''.** No white eyebrow-stripe ..... *featherstoni*, p. 356.
- d.** General colour of the underparts black, more or less glossed with greenish.
- e'.** Two crests—one on the crown, a second on the nape; a large white patch on each flank.
- e''.** Forehead naked; wing-coverts and scapulars dark purple with purple reflections.
- e<sup>s</sup>.** Size very large: wing 13·0–13·6 inches; feathers of face and crests purple ..... *perspicillatus*, p. 357.
- e<sup>s</sup>'.** Size smaller: wing 10·5–11·0 inches; feathers of face deep greenish blue; crests bronze-green ..... *bicristatus*, p. 358.
- e''.** Forehead feathered; wing-coverts and scapulars greenish- and violet-bronze with green reflections..... *pelagicus*, p. 360.
- f.** Two crests, one on each side of the crown commencing behind the eye.
- e''.** Crest-feathers mostly or entirely black ..... *auritus*, p. 370.
- f''.** Crest-feathers white or mostly white. *cincinatus*, p. 373.
- g'.** With a semi-erect crest on the crown.
- g''.** Scapulars bronze-green with narrow dark margins; legs black ..... *graculus*, p. 364.
- h''.** Scapulars bronze-green edged with pale shining brass-green; legs orange-yellow ..... *desmaresti*, p. 368.
- h'.** With no crest. *chalconotus*, p. 369.
- i''.** Back, wing-coverts, and scapulars oil-green with darker green margins; feathers bordering naked throat brownish white; a tuft of long white hair-like feathers behind the ear, and similar plumes scattered over the back and scapulars .. *penicillatus*, p. 363.
- k''.** Back, wing-coverts, and scapulars ash or bronze-brown with dark margins.
- e<sup>s</sup>.** No white band bordering the naked skin on the chin and throat; feathers of the back, wing-coverts, and scapulars with rounded extremities.
- a<sup>4</sup>.** Feathers on inter-ramal space extending to below a vertical from the nostrils ..... *neglectus*, p. 374.

- b*<sup>1</sup>. Feathers on the inter-ramal space not extending beyond a vertical drawn from the eye.
- a*<sup>2</sup>. Head, neck, and underparts black, glossed with steel-blue, a tuft of white hairy feathers behind the ear, back, wing-coverts, and scapulars with bronze-brown middles. *fuscicollis*, p. 375.
- b*<sup>2</sup>. Head, neck, and underparts brownish black, with a dull oil-green gloss; a few narrow white feathers behind the ear; back, wing-coverts, and scapulars with ash-coloured middles. *sulcirostris*, p. 376.
- f*<sup>1</sup>. A white band bordering the naked skin of the chin and throat; feathers of the back, wing-coverts, and scapulars lanceolate, with brownish-ash middles.
- c*<sup>1</sup>. Size larger: culmen 1·9-2·2 inches; wing 10·5-11·5; tail 6·9-7·2. *vigua*, p. 378.
- d*<sup>1</sup>. Size smaller: culmen 1·65-1·85 inches; wing 10·0-10·5; tail 5·8-6·4. *mexicanus*, p. 381.
- a*. General colour of the underparts pure white.
- s*<sup>1</sup>. Legs and feet red, orange or yellowish in dry skins.
- l*<sup>1</sup>. Feathering on the chin extending beyond a vertical line drawn from the anterior margin of the eye (see fig. 3).
- g*<sup>1</sup>. No crest; nasal caruncles well-developed; wide alar bar (outer scapulars in fully-adult birds) and dorsal patch white; culmen 2·55 inches, depth at forehead 0·5. *carunculatus*, p. 384.
- h*<sup>1</sup>. A well-developed crest on the crown.
- e*<sup>1</sup>. Fore part of the neck white, like the throat and rest of the underparts.
- c*<sup>2</sup>. Nasal caruncles well developed; alar bar (outer scapulars in fully-adult birds) and dorsal patch white; culmen 2·1 inches, depth at forehead 0·35. *onslowi*, p. 385.
- d*<sup>2</sup>. No nasal caruncles.
- a*<sup>3</sup>. Alar bar and dorsal patch white; culmen 2·4 inches, depth at forehead 0·35. *stewarti*, p. 385.

- b*<sup>2</sup>. No white dorsal patch; culmen 2.05 inches, depth at forehead 0.25 ..... *colensoi*, p. 386.
- f*<sup>1</sup>. Fore part of neck black.
- c*<sup>1</sup>. Throat white.
- c*<sup>2</sup>. Wing-coverts and scapulars uniform oil-green; culmen 2.1 inches, depth at forehead 0.25 ..... *campbelli*, p. 387.
- d*<sup>2</sup>. Wing-coverts and scapulars dull bronze-green, margined with dark greenish blue; culmen 2.9 inches, depth at forehead 0.35 .. *bougainvillii*, p. 387.
- f*<sup>3</sup>. Throat black; a white patch on the ear-coverts ..... *magellanicus*, p. 388.
- m*<sup>1</sup>. Feathering on the chin not extending beyond a vertical line drawn from the anterior margin of the eye (see fig. 4); crown with a well-developed crest.
- i*<sup>3</sup>. Plumage surrounding the ear white (see fig. 5); white alar bar and dorsal patch; nasal caruncles less developed ..... *atriceps*, p. 390.
- k*<sup>2</sup>. Plumage surrounding the ear black; nasal caruncles largely developed.
- g*<sup>1</sup>. Purple-black of the sides of the head commences in a line with the commissure of the bill (see fig. 7); white alar bar moderately developed ..... *albiventer*, p. 392.
- k*<sup>1</sup>. Purple-black of the sides of the head extends below the commissure of the bill and partly borders the naked gular skin (see fig. 6); no trace of white alar bar ..... *terruccosus*, p. 393.
- k*<sup>1</sup>. Legs and feet black.
- n*<sup>1</sup>. Scapulars bronze-grey bordered with black and slightly glossed with green; lower back dark green; wing 11.5-11.8 inches ..... *varius*, p. 394.
- o*<sup>1</sup>. Scapulars bronze-green with very narrow steel-blue margins; lower back dark steel-blue.
- p*<sup>1</sup>. White feathering on the throat extending forwards in a patch below the commissure of the bill (see fig. 8); culmen 1.85-2.0 inches; wing 9.5-10.4 ..... *gouldi*, p. 396.
- m*<sup>3</sup>. Throat below the commissure of the bill naked (see fig. 9); culmen 2.7 inches; wing 10.8 .... *hypoleucus*, p. 397.

II. Culmen less than 1·5 inch in length from feathers on forehead to tip.

- C. Chin, throat, and underparts pure white . . . *melanoleucus*, p. 398.  
 D. Chin, throat, and sometimes the fore-neck white; rest of underparts black . . . . . *brevirostris*, p. 400.  
 E. Chin and throat reddish brown; rest of underparts black . . . . . *pygmaeus*, p. 405.  
 F. Chin, throat, and underparts black.  
   *f.* Feathers of the back and scapulars dark ash-grey bordered with black . . . . . *javanicus*, p. 402.  
   *g.* Feathers of the back and scapulars brownish ash, with a black spot at the extremity . . . . . *africanus*, p. 407.

II. *Adult in Non-breeding Plumage.*

I. Culmen exceeding 1·5 inch in length from feathers on forehead to tip.

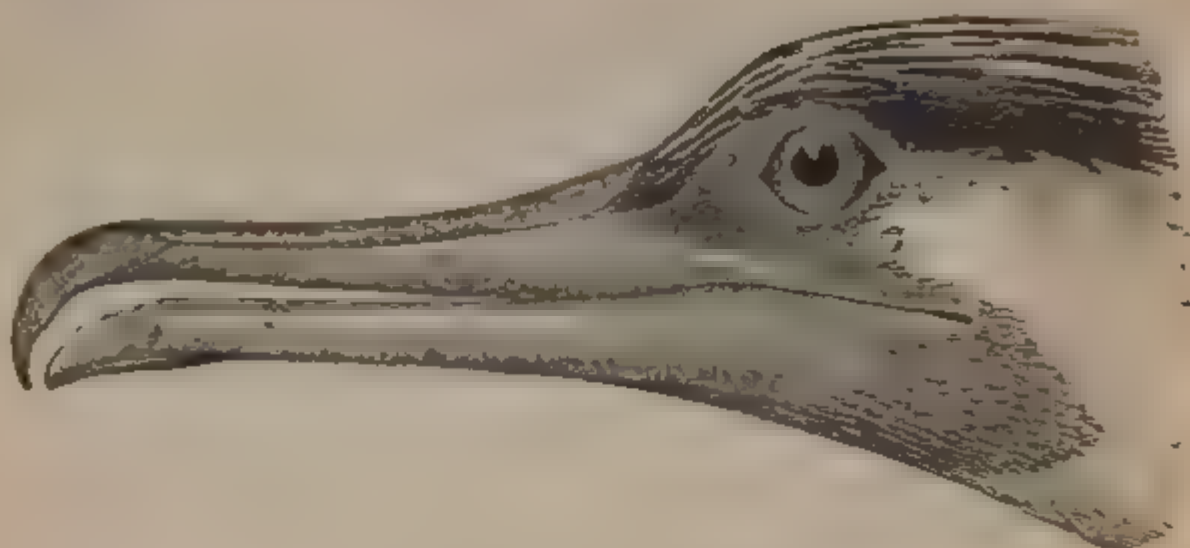
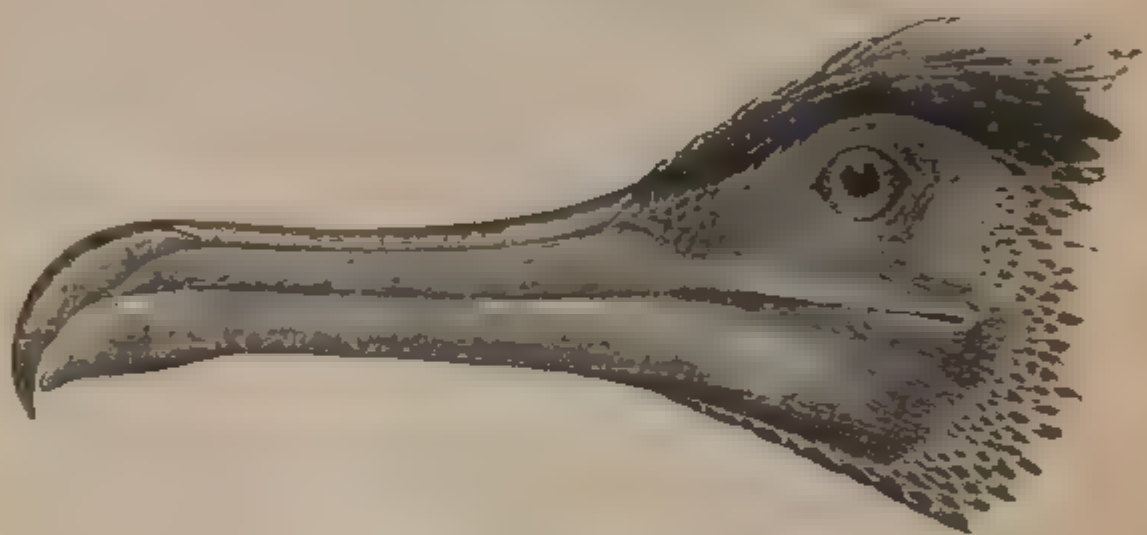
- A. Tail composed of 14 feathers.  
   *a.* Breast and belly black glossed with dull green or blue; legs blackish.  
     *a'*. Size larger: wing more than 12 inches long.  
       *a''*. Fore-neck and chest black, with bluish or greenish gloss.  
       *a³*. Feathers bordering the naked throat pure white; wing-coverts and scapulars bronze-brown margined with dark steel-blue; underparts with a dark bluish-green gloss . . . . . *carbo*, p. 340.  
     *b³*. Feathers bordering the naked throat white mottled with dark greenish black; wing-coverts and scapulars greenish bronze margined with dark green; underparts glossed with oil-green . . . . . *filamentosus*, p. 350.  
     *b''*. Fore-neck and chest white; wing-coverts and scapulars bronze-brown margined with greenish black . . . . . *lucidus*, p. 351.  
     *b'*. Size smaller: wing less than 10·5 inches long; underparts black glossed with dark blue . . . . . *capensis*, p. 352.  
   *b.* Breast and belly smoky grey; an elongate white patch on each side of the neck; legs coral-red (orange in dry skin) . . . . . *gaimardi*, p. 353.  
 B. Tail composed of 12 feathers.  
   *a.* General colour of the underparts smoky grey; legs and feet orange-yellow.  
     *c'*. White eyebrow-stripes continued down each side of the neck to the shoulder . . . . . *punctatus*, p. 354.  
     *d'*. No white eyebrow-stripes . . . . . *featherstoni*, p. 356.

- d. General colour of the underparts black, more or less glossed with greenish.
- e'. Forehead naked; sides of the upper back and scapulars violet-purple with purple reflections.
- c''. Size very large: wing 13-13.6 inches; feathers of face purple-bronze ..... *perspicillatus*, p. 357
- d'. Size smaller: wing 10.5-11 inches; feathers of face deep greenish blue ..... *bicristatus*, p. 358.
- f'. Forehead feathered.
- e''. Upper back and scapulars uniform greenish- and purplish-bronze with green reflections, and without distinct marginal bands; neck deep bluish violet..... *pelagicus*, p. 360.
- f''. Each feather of the upper back and scapulars with a well-marked marginal band.
- c<sup>3</sup>. General colour of the upper back and scapulars bronze-green or oil-green.
- a<sup>4</sup>. Each feather with a blackish margin; legs and feet blackish.
- a<sup>5</sup>. Head and neck deep purplish black ..... *penicillatus*, p. 363.
- b<sup>5</sup>. Head and neck oily bronze-green..... { *graculus*, p. 364.  
*desmaresti*, p. 368.
- b<sup>4</sup>. Each feather with a shining brass-green margin; legs and feet orange-yellow ..... *chalconotus*, p. 369.
- d<sup>3</sup>. General colour of the upper back and scapulars bronze-brown or ash, each feather margined by a black band.
- c<sup>4</sup>. Feathers of the back and scapulars rounded at the extremity.
- c<sup>5</sup>. Size larger: wing more than 11 inches long ..... { *auritus*, p. 370.  
*cincinatus*, p. 373.
- a<sup>6</sup>. Size smaller: wing less than 11 inches.
- a<sup>6</sup>. Feathers on inter-ramal space extending to below a vertical drawn from the nostrils ..... *neglectus*, p. 374.
- b<sup>6</sup>. Feathers on inter-ramal space not extending beyond a vertical drawn from the eye.
- a<sup>7</sup>. Back and scapulars with bronze-brown middles; lower back black glossed with dark bluish green . *fuscicollis*, p. 375.

- b'. Back and scapulars with ash middles; lower back brownish black, with a dull oil-green gloss .... *sulcirostris*, p. 376.  
 d'. Feathers of the back and scapulars lanceolate.  
 e'. Size larger: culmen 1·9-2·2 inches; wing 10·5-11·5; tail 6·0-7·2 ..... *vigna*, p. 378.  
 f'. Size smaller: culmen 1·65-1·85 inch; wing 10-10·5; tail 5·8-6·4 ..... *mexicanus*, p. 381.  
 e. General colour of the underparts pure white.  
 g'. Legs and feet red, orange, or yellowish in dry skins.  
 g''. Feathering on the chin extending beyond a vertical line drawn from the anterior margin of the eye (see fig. 3).  
 e'. Ear-coverts bluish or purplish black.  
 e'. Fore part of neck white like the throat and rest of underparts.  
 g'. With nasal caruncles.  
 e'. Size larger: culmen 2·55 inches, depth at forehead 0·5, wing 12·3. .... *carunculatus*, p. 384.  
 d'. Size smaller: culmen 2·15 inches, depth at forehead 0·35; wing 10·4 ..... *onslowi*, p. 385.  
 h'. With no nasal caruncles.  
 e'. Size larger: culmen 2·4 inches; wing 11·6-11·7; white on the fore-neck as wide as the white on the throat ..... *stewarti*, p. 385.  
 f'. Size smaller: culmen 2·05 inches; wing 10·6-10·9; white on the fore-neck much narrower than on the throat ..... *colensoi*, p. 386.  
 f'. Fore part of neck black; throat and rest of underparts white.  
 a. Wing-coverts and scapulars uniform oil-green; culmen 2·1 inches ..... *campbelli*, p. 387.  
 k'. Wing-coverts and scapulars dull bronze-green margined with dark greenish blue; culmen 2·9 inches ..... *bougainvillii*, p. 387 - -  
 f'. Ear-coverts white (probably the throat and fore-neck become white in the non-breeding plumage) ..... *magellanicus*, p. 388

- k''.** Feathering on the chin does not extend beyond a vertical line drawn from the anterior margin of the eye (see fig. 4).
- g<sup>3</sup>.** Plumage surrounding the ear white (see fig. 5)..... *atriceps*, p. 390.
- k<sup>3</sup>.** Plumage surrounding the ear black, glossed with steel-blue (see figs. 6, 7).
- g<sup>4</sup>.** Blue-black of the sides of the head commences in a line with the commissure of the bill (see fig. 7) ..... *albiventer* p. 392.
- k<sup>4</sup>.** Blue-black of the sides of the head extends below the commissure of the bill, and partly borders the naked gular skin (see fig. 6)..... *verrucosus*, p. 393.
- k'.** Legs and feet black.
- i''.** Scapulars bronze-grey, bordered with black and slightly glossed with green; lower back black, glossed with dark green; wing 11·5-11·8 inches ..... *varius*, p. 394.
- k''.** Scapulars bronze-green, with very narrow steel-blue margins; lower back dark steel-blue.
- i<sup>3</sup>.** White feathering on the throat extending forwards in a patch below the commissure of the bill (see fig. 8); culmen 1·85-2 inches; wing 9·5-10·4 ..... *gouldi*, p. 396.
- k<sup>3</sup>.** Throat below the commissure of the bill naked (see fig. 9): culmen 2·7 inches; wing 10·8 .. *hypoleucus*, p. 397.
- II.** Culmen less than 1·5 inch in length from feathers on forehead to tip.
- C.** Chin, throat, and underparts pure white .. *melanoleucus*, p. 398.
- D.** Chin, throat, and sometimes fore-neck white; rest of underparts black..... *brevirostris*, p. 400.
- E.** Chin and feathers bordering bare throat white; rest of underparts black, with some dull oil-green gloss ..... *javanicus*, p. 402.
- F.** Chin and throat white; fore-neck brownish white.
- f.** Breast and rest of underparts mottled brownish white; scapulars dark ash-grey bordered with black, and narrowly edged externally with brownish white.. *pygmæus*, p. 405.
- g.** Breast and rest of underparts whitish; scapulars brownish ash, with a black spot at the extremity and narrowly edged externally with brownish white ..... *africanus*, p. 407.



Fig 1.—*P. carbo*.Fig. 2.—*P. filamentorus*.1. *Phalacrocorax carbo*. (Fig. 1.)

Le Cormoran, *Brisson, Orn.* vi. p. 511, pl. xlv. (1760); *D'Aubent. Pl. Enl.* ix. pl. 66 (no. 927); *Buff. Hist. Nat. Ois.* viii. p. 310, pl. xxvi (1781); *Borkhausen, etc. Teutsche Orn.* pl. 56 (1807).

*Pelecanus carbo*, *Linn. S. N.* i. p. 216 (1766); *Gmel. S. N.* i. pt. ii. p. 573 (1788); *Lath. Ind. Orn.* ii. p. 886 (1790); *Bonnat Tabl. Encycl. Meth.* i. p. 40, pl. xv. fig. 1 (1790); *Cuv. Règ. Anim., Ois.* p. 524 (1817); *id. Règ. Anim., Ois.* i. p. 562 (1829).

Corvorant, *Latham, Gen. Syn.* iii. pt. ii. p. 593 (1785); *id. Suppl.* i. p. 279 (1787); *id. Suppl.* ii. p. 363 (1802); *Mont. Orn. Dict.* i. pp. — (1802).

*Carbo vulgaris*, *Lacép. et Daudin, in Buffon Hist. Nat.* (1<sup>er</sup>mo Didot), *Quadr.* xiv. p. 318 (1799).

*Pelecanus sinensis*, *Shaw & Nodd, Nat. Misc.* xiii. pl. 529 (about 1801); *Latham, Suppl. Ind. Orn.* p. 70 (1801) [tail of 12 feathers?]; *Dumont in Levrault's Dict. Sci. Nat.* x. p. 455 (1818).

Chinese Corvorant, *Lath. Gen. Syn. Suppl.* ii. p. 364 (1802).

*Carbo cormoranus*, *Meyer & Wolf, Taschen. der Deuts.* ii. p. 576, pl. (1810); *Temm. Man. d'Orn.* ii. p. 894 (1820), iv. p. 563 (1840); *Werner, Atl. Ois. d'Eur.*, Ord. 15. pl. 87 (1828); *Lesson, Traité d'Orn.* p. 605, pl. 115. fig. 2 (1831); *Ménétr. Cat. Rais.* pp. 55, v (1832); *Schinz, Nat. Abbild. Vög.* p. 383, pl. 132. fig. (1833); *Benoit, Orn. Sicil.* p. 191 (1840); *Cara, Orn. Sard.* p. 198 (1842); *Temm. & Schl. Faun. Jap., Aves*, p. 129 (1850); *Gould, P. Z. S.* 1859, p. 150 [Tenasserim]; *Finsch, Ibis*, 1877, p. 54 [Marakul Lake, W. Siberia]; *Rudolf etc. J. f. O.* 1879, p. 82 [Don]; *Tschusi u. Della Torre, Orn.* iii. p. 350 (1887), iv. p. 361 (1888), vi. p. 266 (1890) [Austro-Hungary]; *Middendorff, Orn.* iv. p. 300 (1888) [Baltic]; *Gätke, Heligoland*, p. 541 (English ed. 1895); *Blasius, Orn.* viii. pp. 31, 56, 80, 84, 202, 209 (1895), p. 685 (1896).

*Phalacrocorax carbo*, *Pall. Zoogr. Rosso-As.* ii. p. 297 (1811); *Dumont, in Levrault's Dict. Sci. Nat.* x. p. 448 (1818); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 76, pl. 10 (1826); *Selby, Ill. Brit. Orn.* ii. p. 446, pl. 84 (1833); *Nutt. Man. Orn.* p. 479 (1834) [Hudson's Bay to Georgia]; *Nils. Scand. Faun.* ii. p. 476 (1835); *Aud. Orn. Biog.* iii. p. 458, pl. 266 (1835); *Gould, B. Eur.* v. pl. 407 (1837); *Aud. B. Amer.* vii. p. 123, pl. 415 (1839); *Körner, Skand. Fögl.* p. 21, pl. 59. fig. 1 (1839-46); *Keys. u. Blas. Wirbelth.* p. 232 (1840); *Démid. Voy. Russ. Mérid.* iii. p. 302 (1840); *G. R. Gray, List of B.* pt. iii. p. 184 (1844); *Mühle, Beitr. Orn. Griechenl.* p. 130 (1844); *Rüpp. Vög. N.O.-Afr.* p. 140 (1845); *Degl. Orn. Europ.* ii. p. 375 (1849); *Thomps. Nat. Hist. Irel.* iii. p. 240 (1851); *Macgill. Brit. B.* v. p. 380, fig. (1852); *Watters, Nat. Hist. B. Irel.* p. 234 (1853); *Brehm, Vogelfang*, p. 359 (1855); *Bonap. Consp. Av.* p. 168 (1855); *Heugl. Vög. N.O.-Afr.* p. 72 (1856); *id. Syst. Orn. W.-Afr.* p. 259 (1857); *Schl. Vog. Nederl.* p. 574, pls. 324-326 (1858); *Schrenck, Reis. Amurl.* i. p. 488 (1859); *Jaubert & Lapomm. Rich. Orn.* p. 379 (1859); *Walker, Ibis*, 1860, p. 166 [Godhavn, Greenland]; *Linderm. Vög. Griechenl.* p. 166 (1860); *Bryant, Pr. Bost. Soc.* viii. p. 70 (1861) [Gulf of St. Lawrence, breeding]; *Radde, Ost-Sib.* ii. p. 379 (1863); *Swinh. P. Z. S.* 1863, p. 324 [Yeddo, April]; *id. Ibis*, 1863, p. 433; *Adams, Ibis*, 1864, p. 35 [Egypt and Nubia]; *Wright, Ibis*, 1864, p. 154 [Malta and Gozo]; *Tristram, P. Z. S.* 1864, p. 455 [Palestine]; *Fitz. Atl. Nat. Vög.* fig. 333 (1864); *Filippi, Viagg. Pers.* i. p. 352 (1865); *Rolle, J. f. O.* 1865, p. 415 [Sardinia]; *Degl. & Gerbe, Orn. Eur.* ii. p. 352 (1867); *Taylor, Ibis*, 1867, p. 71 [Egypt]; *Whitely, Ibis*, 1867, p. 210 [Hakodadi]; *Drake, Ibis*, 1867, p. 430 [Cape Spartel]; *Collett, Vid. Selsk. Forh. Christ.* 1868, p. 182; *Tristram, Ibis*, 1868, p. 331 [Palestine]; *Smith, Ibis*, 1868, p. 458 [Portugal]; *Turnbull, B. E. Pennsylv.* p. 48 (1869) [New Jersey]; *Swinh. P. Z. S.* 1870, p. 603 [Japan Sea]; *Wyatt, Ibis*, 1870, p. 18 [Red Sea]; *Ellice & Buckley, Ibis*, 1870, p. 336 [Bosphorus and Sea of Marmara]; *Homeyer, J. f. O.* 1870, p. 434 [Amurland]; *Fritsch, Nat. Vög. Europa's*, p. 450 (1870), *Atl.* pl. 53. figs. 1 & 5 (1871); *Shelley, Ibis*, 1871, p. 317; *Saunders, Ibis*, 1871, p. 398 [S. Spain]; *Swinh. P. Z. S.* 1871, p. 420; *Gray, B. West Scotl.* p. 454 (1871); *Shelley, B. Egypt*, p. 295 (1872); *Fritsch, J. f. O.* 1872, p. 373 [Bohemia]; *Gould, B. Gt. Brit.* v. pl. 52 (1873); *Taylor, Ibis*, 1872, p. 234 [Crimea]; *Brooke, Ibis*, 1873, p. 345 [Sardinia]; *Tacz. J. f. O.* 1873, p. 111 [Dauria]; *Kennedy, Ibis*, 1874, p. 110 [Suez];

- Swinh. Ibis*, 1874, p. 164, 1875, p. 137 [Chefoo]; *Sharpe, Voy. 'Erebus' & 'Terror,' Birds App.* p. 34 (1875); *Irby, Orn. Gibraltar*, p. 207 (1875); *Dresser, Ibis*, 1876, p. 414 [Turkestan]; *Schalow, J. f. O.* 1876, p. 5 [Mark Brandenburg]; *Tacz. J. f. O.* 1876, p. 189 [Ussuri]; *Milne in Rowley's Orn. Misc.* i. p. 128 (1876) [Cormorant-fishing]; *Blanf. E. Persia*, ii. p. 298 (1876); *Tacz. Bull. Soc. Zool. Fr.* ii. p. 41 (1877) [Kamtschatka], p. 163 [Poland]; *David & Oustal. Oa. Chine*, p. 532 (1877) [part]; *Anders. B. W. Yunnan*, p. 696 (1878) [Bhamó]; *Doig, Str. F.* vii. p. 468 (1878) [E. Narra]; *Blakist. & Pryer, Ibis*, 1878, p. 210 [Japan]; *Hume & Davison, Str. F.* vi. p. 406 (1878) [Tenasserim]; *Ball, Str. F.* vii. p. 234 (1878) [Ganges to Godaveri]; *Dresser, B. Europe*, vi. p. 151, pl. 388 (1879); *Doig, Str. F.* viii. pp. 372, 377 (1879) [E. Narra]; *Scully, Str. F.* viii. p. 364 (1879); *Bogd. B. Caucas.* p. 181 (1879); *Butl. Cat. B. Sind.* p. 82 (1879), *id. Cat. B. S. Bombay*, p. 113 (1880); *Finsch, Ver. Ges. Wien*, xxix. p. 280 (1880) [W. Siberia]; *Legge, B. Ceylon*, iii. pp. 1182, 1223 (1880); *Reid, Str. F.* x. p. 87 (1881) [Lucknow]; *Scully, Ibis*, 1881, p. 594 [Gilgit]; *Oates, Str. F.* x. p. 248 (1883) [Pegu]; *Stearns, P. U.S. Nat. Mus.* vi. p. 121 (1883) [Labrador]; *Seebohm, Ibis*, 1883, p. 36 [Caspian and Black Seas]; *Severtz. Ibis*, 1883, p. 77 [Pamir]; *Irby, Ibis*, 1883, p. 190 [Santandar]; *Oates, B. Burmah*, ii. p. 231 (1883); *Stearns & Coues, N. Eng. B. Life*, pt. ii. p. 339 (1883); *Baird, Brew., & Ridgw. Water-B. N. Amer.* ii. p. 145, fig. (1884); *Sharpe's ed. Layard B. S. Afr.* p. 778 (1884); *Radde, Orn. Caucas.* p. 467 (1884); *Saund. ed. Farrell Br. B.* iv. p. 143 (1884); *Coues, Key N. Am. B.* 2nd ed. p. 726 (1884); *Seebohm, Hist. Brit. B.* iii. p. 650, pl. 34, fig. egg (1885); *Dixon, Ibis*, 1885, p. 91 [St. Kilda]; *Reid, Ibis*, 1885, p. 249 [Morocco]; *Seebohm, Ibis*, 1885, p. 270; *Brewst. Auk*, ii. p. 112 (1885) [Massachusetts]; *Gigl. Avif. Ital.* p. 271 (1886); *Salvad. Ucc. Ital.* p. 270 (1886); *Booth, Rough Notes*, iii. pt. xi. (1886); *Scully, J. As. Soc. Beng.* lvi. pt. ii. p. 88 (1887); *Ridgw. Man. N. A. B.* p. 78 (1887); *Tacz. Orn.* iv. p. 504 (1888) [Poland]; *Hume, Str. F.* xi. p. 352 (1888); *Pleske, Mém. Acad. St. Pétersb.* (7) xxxvi. no. 3, p. 56 (1888) [Tschinas]; *St. John, Ibis*, 1889, p. 180 [S. Afghanistan]; *Lilford, Ibis*, 1889, p. 346 [Cyprus]; *Dutcher, Auk*, vi. p. 133 (1889) [New York]; *Chamberl. Auk*, vi. p. 215 (1889) [S. Greenland]; *Radde u. Walt. Orn.* v. pp. 124, 237 (1889) [Transcaspiia]; *Hartert, J. f. O.* 1889, p. 406 [Perak]; *Saund. Ill. Man. Brit. B.* p. 349 (1889); *Gigl. Avif. Ital.* pt. i. p. 425, pt. ii. p. 658, pt. iii. p. 515 (1889-91); *Oates's ed. Hume's Nests & Eggs*, iii. p. 270 (1890); *Seebohm, B. Japan*, p. 208, fig. (1890); *id. Ibis*, 1890, p. 407 [Ireland]; *Turle, Ibis*, 1891, p. 7 [Blacket Is.]; *Evans, Ibis*, 1891, p. 69 [incubation 28 to 29 days]; *Styan, Ibis*, 1891, pp. 327, 401 [Lower Yangtse]; *Sharpe, Second Yarkand Mus., Aves*, p. 127 (1891); *Seebohm, Ibis*, 1892, p. 28 [Heligoland]; *id. Ibis*, 1892, p. 400 [Tsu-shima]; *La Touche, Ibis*, 1892, p. 487 [Foochow, Swatow]; *Hartert, Ibis*, 1892, p. 520 [E. Prussia]; *Lilford, Col. Fig. Br. B.* pt. xxii. (1892); *Blagg, Ibis*, 1893, p. 353 [Shetland]; *Styan, Ibis*, 1893, p. 434 [Hainan]; *Koenig, J. f. O.* 1893, p. 105 [Tunis]; *Bagg, Auk*, xi. p. 163 (1894) [New York]; *Reiser, Orn. Balcanica*, ii. p. 194 (1894), iv. p. 143 (1896); *A.O.U. Check-l.* 2nd ed. p. 42 (1895); *Pearson, Ibis*, 1895, p. 247 [Iceland]; *Irby, Orn. Gibraltar*, 2nd ed. p. 198 (1895); *Sharpe, Handb. B. Gr. Brit.* ii. p. 211

- (1896); *W. Sclater, Ibis*, 1896, p. 522 [Caledon Dist.]; *Shufeldt, Auk*, xiii. p. 312, pl. v. (1896) [Lofoten Is.].
- Common Corvorant, *Pennant, Brit. Zool.* ii. p. 281 (1812); *Lath. Gen. Hist. B.* x. p. 414 (1824); *Yarrell, Hist. Brit. B.* iii. p. 373 (1843); *Jouy, Am. Nat.* xxii. p. 1 (1888) [Cormorant-fishing]; *Hart, Zoologist*, (3) xx. p. 231 (1896) [Donegal].
- Hydrocorax carbo*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 83 (1817); *Vieill. Faun. Franç.* p. 343 (1828).
- Hydrocorax sinensis*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 86 (1817).
- Halieus carbo*, *Licht. Verz. Doubl.* p. 86 (1823); *Reinhardt, J. f. O.* 1854, p. 443 [Greenland]; *Hansm. J. f. O.* 1872, p. 310.
- Chinese Shag, *Lath. Gen. Hist. B.* x. p. 423 (1824).
- New Holland Shag, *Lath. Gen. Hist. B.* x. p. 431 (1824).
- Phalacrocorax sinensis*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 96 (1826); *G. R. Gray, List of B.* pt. iii. p. 184 (1844); *Swinh. Ibis*, 1867, p. 390 [Amoy]; *Ibis*, 1880, p. 375 [Cormorant-fishing in China].
- Phalacrocorax novæ-hollandiæ*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 93 (1826) [no. of tail-feathers given as 12]; *Gould, Handb. B. Austr.* ii. p. 488 (1865); *Ramsay, Ibis*, 1866, p. 335 [Port Denison]; *Gray, Hand-l. B.* iii. p. 127 (1871); *Buller, B. N. Zeal.* p. 325 (1873); *Hutton, Ibis*, 1874, p. 42; *Ramsay, P. Z. S.* 1877, p. 348 [N.E. Queensland]; *Buller, Man. B. N. Zeal.* p. 92 (1882); *id. B. N. Zeal.* 2nd ed. ii. p. 145 (1888).
- Cormoranus crassirostris*, *Bail'lon, Mem. Soc. Abbev.* 1833, p. 77.
- Halieus gracilis*, *Meyen, Nov. Act. xvi. Suppl.* i. p. 114, pl. xxiii. (1834); *Reichenb. Natatores*, pl. lxx. fig. 978 (1850).
- Halieus leucogaster*, *Meyen, Nov. Act. xvi. Suppl.* i. p. 112, pl. xxii. (1834).
- Phalacrocorax medius*, *Nilss. Scand. Faun.* ii. p. 478 (1835).
- Phalacrocorax carboides*, *Gould, P. Z. S.* 1837, p. 156 [Tasmania]; *id. Syn. B. Austr., App.* p. 7 (1838) [Tasmania]; *Fraser, P. Z. S.* 1839, p. 114 [S. Australia]; *G. R. Gray, List of B.* pt. iii. p. 184 (1844); *Gould, B. Austr.* vii. pl. 66 (1848).
- Phalacrocorax medius*, *Körner, Skand. Fogl.* p. 21, pl. 59. fig. 2 (1839-46); *Fritsch, Nat. Vög. Europa's*, p. 451 (1870).
- Halieus cormoranus*, *Naum. Nat. Vög. Deutschl.* xi. p. 53, pl. 279 (1842); *Püssler, J. f. O.* 1853, p. 315 [Lapland].
- Graculus albiventris*, *Tickell, J. As. Soc. Beng.* xi. p. 463 (1842).
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- Carbo raptensis*, *Hodgs. Icon. ined.* no. 555; *id. in Gray's Zool. Misc.* p. 86 (1844).
- Carbo javanica?* v. *raptensis*, *Hodgs. Icon. ined.* no. 559; *id. in Gray's Zool. Misc.* p. 86 (1844).
- Graculus carboides*, *G. R. Gray, Voy. 'Erebus' & 'Terror,' Birds*, p. 20 (1845); *Reichenb. Natatores*, pl. xxxv.<sup>a</sup> figs. 2549-50 (1850); *G. R. Gray, Ibis*, 1862, p. 251 [New Zealand].
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- J. f. O.* 1869, p. 389 [Faroes]; *Finsch & Hartl. Vög. Ost-Afr.* p. 844 (1870); *Swinh. Ibis*, 1870, p. 307 [Hainan, Siam]; *Finsch, J. f. O.* 1870, p. 375, 1872, p. 257 [N. Zealand]; *Gray, Hand-l. B.* iii. p. 127 (1871); *Gurney, ed. Anderss. B. Damara Ld.* p. 307 (1872); *Hutton, Ibis*, 1872, p. 249 [Chatham I.]; *Coues, Key N. Am. B.* p. 302 (1872); *Lloyd, Ibis*, 1873, p. 421 [Kattiawar]; *Heugl. Orn. N.O.-Afr.* p. 1486 (1873); *Travers, Tr. N. Zeal. Inst.* v. p. 221 (1873) [Chatham I.]; *Hume, Nests & Eggs Ind. B.* p. 659 (1873), *id. Str. F.* i. p. 289 (1873) [Sind]; *Adam, Str. F.* i. p. 403 (1873) [Sambhur I.]; *Ball, Str. F.* ii. p. 440 (1874) [Chota Nagpur]; *Hume, Str. F.* ii. p. 484 (1874) [Tenasserim]; *Salvad. Ucc. Born.* p. 364 (1874); *Finsch, J. f. O.* 1874, pp. 174, 213 [Chatham Is.]; *Oates, Str. F.* iii. p. 349 (1875) [Pegu]; *Blyth, Cat. Mamn. B. Burma*, p. 164 (1875); *Danf. & Brown, Ibis*, 1875, p. 431 [Transylvania]; *Barratt, Ibis*, 1876, p. 214 [Transvaal]; *Scully, Str. F.* iv. pp. 100, 204 (1876) [E. Turkestan]; *Butler, Str. F.* iv. p. 33 (1876), v. pp. 225, 235 (1877) [Mt. Aboo and N. Guzerat]; *Oates, Str. F.* v. pp. 141, 169 (1877) [Pegu, nesting]; *Prjev. in Rowley's Orn. Misc.* iii. pp. 146, 154 (1878) [S. E. Mongolia, Ordos, Kokonor]; *Fischer, J. f. O.* 1879, p. 284 [E. Africa]; *Biddulph, Str. F.* ix. p. 366 (1880) [Gilgit]; *Maynard, B. E. N. Amer.* p. 470 (1881); *Biddulph, Ibis*, 1881, p. 102 [Gilgit]; *Kelham, Ibis*, 1882, p. 203 [Perak R.]; *Finsch, Ibis*, 1882, p. 401 [New Zealand]; *Samuels, N. & E. Birds*, p. 534 (1883); *Brewst. Bull. Nat. Orn. C.* viii. p. 186 (1883) [S. Carolina]; *Marshall, Ibis*, 1884, p. 425 [Chamba]; *Sunder. Ibis*, 1886, p. 457 [wing]; *Phillips, Zoologist*, (3) xii. p. 380 (1888) [Bird Rock, N. Wales].
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- Graculus sinensis*, *Reichenb. Natatores*, pl. lxx. fig. 977 (1850); *G. R. Gray, Hand-l. B.* iii. p. 127 (1871).
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- Phalacrocorax carbo major*, *Nils. Skand. Faun.* ii. p. 515 (1858); *Palmén, J. f. O.* 1876, p. 61 [Finland].
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- Pelecanus flavirostris*, *Ellman, Zool.* 1861, p. 7472.
- ? *Pelecanus major*, *Ellman, Zool.* 1861, p. 7472.
- Carbo nudigula*, *Brandt, fide Finsch & Hartl. Vög. Ost-Afr.* p. 844 (1870).
- Carbo phalacrocorax*, *Severtz. J. f. O.* 1873, p. 340 [Tian Shan].
- Carbo phalacrocorax* var. *continentalis*, *Severtz, Turkest. Jervotne*, p. 70 (1873); *id. Zeit. ges. Orn.* iv. p. 21 (1888).
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*Adult in breeding-plumage.* General colour black, glossed with dull purplish or bluish oil-green; top of the head and greater part of the neck covered with long, narrow, white feathers, which often hide the shorter black plumage beneath and give these parts a nearly white appearance; a well-developed crest of black feathers glossed with blue, about 1·5 inch in length, and extending on to the nape;

feathers of the throat forming a wide white border to the naked gular pouch; upper back, scapulars, and wing-coverts dull bronze-brown, each feather widely bordered with dark bluish green; quills brownish black with a slight greenish gloss, secondaries more strongly washed with greenish and margined externally with darker colour: a large patch of white feathers on each flank. Tail black, and composed of 14 feathers. Total length about 36 inches, culmen 2·3-3·2, wing 12·5-14, tail 6·6-7·2, tarsus 2·3-2·85.

Iris bright emerald-green: naked skin round eye greenish brown, below the eye and on gular sac lemon-yellow. Bill greyish brown, dusky along culmen and yellowish white towards the base; legs and feet blackish.

*Adult in non-breeding plumage.* Similar to the above: but the white hair-like feathers on the head and neck are wanting, as well as the white patches on the flanks.

This species appears to breed in different parts of its range, throughout the entire year, for we have specimens in full breeding-plumage procured in nearly every month.

In Great Britain, the perfect breeding-plumage is generally assumed by the end of February and lasts till the beginning of April. In Sikkim we find birds in perfect breeding-plumage in the months of January, February, March, August, and December: while in Pegu they breed in November. In British birds the white hair-like feathers of the head and neck and the white flank-patches begin to make their appearance early in January, and are generally complete towards the end of February. The former are retained until the beginning of April, when they commence to drop out, and disappear entirely by the middle of May. The white flank-patches are retained till the middle of June and do not disappear till the end of July.

The various changes of plumage, so far as I have been able to ascertain, are entirely produced by moult, which appears to be continuous, at least among younger birds of one or two years old, throughout the greater part of the year. A series of birds collected at Cromarty shows the moult among these younger birds to be at its height in the middle of May.

It has been stated that "the female has the longer crest and is brighter in colour as well as larger in size": but this is not the case: and, as may be seen from the table of measurements given below (p. 346), the male is, as a rule, larger than the female. There is, however, very considerable individual variation in size irrespective of sex. Birds from the Faroe Islands, Great Britain, &c., are distinctly larger than those from India, &c., the bill being, as a rule, conspicuously larger and stouter. No great importance need, however, be attached to this difference, for the largest Indian specimens are not appreciably smaller than some of the birds from northern latitudes.

|                  |                       | Bill.    | Wing.     | Tarsus.  |
|------------------|-----------------------|----------|-----------|----------|
| Adult.           | Greenland .....       | 2.5      | 13.2      | 2.45     |
| Adult.           | Faroe Is. ....        | 3.2      | 14.0      | 2.85     |
| ♀ adult.         | " .....               | 2.9      | 12.8      | 2.55     |
| ♀ adult.         | Orkney Is. ....       | 2.8      | 13.1      | 2.6      |
| ♂ vix adult.     | N. Uist, Hebrides ... | 2.7      | 12.8      | 2.55     |
| (2) ♀ vix adult. | " .....               | 2.9      | 13.1-13.4 | 2.6-2.65 |
| ♂ imm.           | Cromarty .....        | 3.2      | 14.1      | 2.7      |
| (2) ♀ vix adult. | " .....               | 2.8-2.9  | 13.1-13.2 | 2.6      |
| ♂ adult.         | Farne Is. ....        | 2.9      | 14.2      | 2.55     |
| Adult.           | Devonshire .....      | 2.6      | 13.0      | 2.5      |
| ♂ immature.      | Fowey, Cornwall ....  | 3.1      | 14.0      | 2.7      |
| (2) ♀ vix adult. | " .....               | 2.8      | 13.0      | 2.6      |
| ♀ adult.         | Christchurch, Hants . | 2.5      | 12.7      | 2.5      |
| ♀ vix adult.     | " .....               | 2.8      | 13.0      | 2.5      |
| ♂ adult.         | Lower Danube .....    | 2.6      | 13.4      | 2.5      |
| Vix adult.       | Caspian Sea. ....     | 2.6      | 13.4      | 2.5      |
| Immature.        | North Africa .....    | 2.7      | 12.8      | 2.5      |
| (2) Adult.       | Fayoom, Egypt .....   | 2.4-2.7  | 13.0      | 2.4-2.5  |
| ♂ adult.         | Muscat. ....          | 2.65     | 13.2      | 2.4      |
| ♀ adult.         | " .....               | 2.5      | 12.9      | 2.5      |
| ♀ adult.         | Afghan .....          | 2.45     | 12.9      | 2.4      |
| ♂ adult.         | Lob-nor .....         | 2.6      | 13.3      | 2.4      |
| ♀ adult.         | " .....               | 2.3      | 12.6      | 2.3      |
| ♀ adult.         | Karachi .....         | 2.3      | 12.4      | 2.25     |
| Adult.           | Masuri .....          | 2.6      | 13.9      | 2.5      |
| ♂ adult.         | Sultanpur .....       | 2.35     | 12.9      | 2.25     |
| (4) Adult.       | Sikhim .....          | 2.25-2.8 | 12.9-13.7 | 2.25-2.4 |
| ♂ adult.         | Pegu .....            | 2.6      | 13.7      | 2.4      |
| ♀ immature.      | " .....               | 2.5      | 12.7      | 2.3      |
| Adult.           | Keddah .....          | 2.4      | 12.7      | 2.3      |
| Adult.           | Siam .....            | 2.55     | 13.3      | 2.45     |
| Adult.           | Japan .....           | 2.5      | 13.4      | 2.3      |
| Adult.           | Yokohama .....        | 2.45     | 12.7      | 2.45     |
| ♂ vix adult.     | Formosa .....         | 2.65     | 12.8      | 2.4      |
| Adult.           | Australia .....       | 2.6      | 13.4      | 2.4      |
| (2) adult.       | S. Australia .....    | 2.7      | 13.3-14.0 | 2.4-2.5  |
| (2) adult.       | New Zealand .....     | 2.4-2.5  | 12.6-13.4 | 2.3-2.45 |
| Adult.           | Chatham Is. ....      | 2.3      | 12.0      | 2.3      |

*Young when first hatched* are blind and covered with purplish-black skin; in the course of a few days they acquire a thick covering of blackish down.

*Young in first plumage* (September). General colour above dull brown, somewhat glossed on the head, neck, and back with bluish green; feathers of the back, scapulars, and wing-coverts with wide dark margins; throat, front of neck, breast, and belly white; sides, flanks, thighs, and under tail-coverts dark brownish black.

As age advances the fore part of the neck and chest become brown.

*Immature in the plumage of the second year* (September). Upper parts more like those of the adult, but the plumage is less brilliant and mixed here and there with feathers of the first plumage; the feathers of the breast and belly are all widely tipped with brownish black, giving these parts a mottled appearance.

*Immature in the plumage of the third year* (May). Similar to the adult, but the colour of the upper parts is less brilliant, and the



underparts are not of such a rich glossy black. Birds of this age (probably about 26 months old), though they do not breed, assume a partial breeding-plumage: the hair-like feathers on the head and neck being indicated, while the white flank-patches are partially acquired.

*Hab.* The Atlantic coast of North America from Hudson's Bay to Georgia; South Greenland, Iceland, Faroes, thence across Europe and Asia to Kamtschatka; southwards to the Cape of Good Hope, and from the Mediterranean to the Malay Peninsula; Australia, New Zealand, and Chatham Islands.

|                                       |                                                             |                                        |
|---------------------------------------|-------------------------------------------------------------|----------------------------------------|
| <i>a, b.</i> Ad. et juv. sk.          | Greenland, June.                                            | Hume Coll.                             |
| <i>c, d.</i> ♀ ad. sk.                | Faroe Is., March & April<br>( <i>H. C. Müller</i> ).        | Col. H. W. Feilden<br>[P.]             |
| <i>e.</i> ♂ ad. st.                   | Reawick, Shetland.                                          | Dr. Theodore Fisher<br>[P.]            |
| <i>f.</i> ♀ ad. sk.                   | Black Craig, Orkney Is., March<br>19 ( <i>J. H. Dunn</i> ). | Hargitt Coll.                          |
| <i>g.</i> Pull. sk.                   | Orkney Is. ( <i>J. H. D.</i> ).                             | Baron A. von Hügel<br>[P.]             |
| <i>h-l.</i> ♂ ♀ imm. sk.              | Loch Maddv, North Uist,<br>Hebrides, Feb.-March.            | Sir John Campbell-<br>Orde, Bart. [P.] |
| <i>m, n.</i> Pull. st.                | Island of Skye.                                             | Theodore Walker,<br>Esq. [P.]          |
| <i>o-s.</i> ♂ ♀ imm. sk.              | Cromarty, April & Nov.                                      | G. A. St. Quintin,<br>Esq. [P.]        |
| <i>t-æ.</i> ♀ vix ad. et ♂ ♀ imm. sk. | Cromarty, May.                                              | W. R. Ogilvie-Grant,<br>Esq. [P.]      |
| <i>r.</i> ♂ ad. sk.                   | Megstone, Farne Is., March.                                 | Seebohm Coll.                          |
| <i>y.</i> Pull. sk.                   | Craig-y-derm, Merionethshire,<br>June 5.                    | Hargitt Coll.                          |
| <i>z.</i> Ad. sk.                     | Devonshire.                                                 | Montagu Coll.                          |
| <i>a'-r'.</i> ♂ ♀ imm. sk.            | Fowey, Cornwall, Aug. &<br>Sept.                            | Dr. A. Günther [P.]                    |
| <i>s'-t'.</i> Imm. st.                | Fowey, Cornwall, Aug. &<br>Sept.                            | Dr. A. Günther [P.]                    |
| <i>æ'.</i> Ad. st.                    | Dorsetshire.                                                | Baron A. von Hügel<br>[P.]             |
| <i>æ'.</i> Imm. sk.                   | Poole Harbour, Sept. 27.                                    | Baron A. von Hügel<br>[P.]             |
| <i>æ', r'.</i> ♀ ad. et imm. sk.      | Christchurch, Hants, Feb.                                   | Baron A. von Hügel<br>[P.]             |
| <i>æ'.</i> ♀ imm. st.                 | Sweden, May 2.                                              | C. W. Lundborg [C.]                    |
| <i>æ'.</i> ♂ imm. sk.                 | Havre, Oct. 25.                                             | Hargitt Coll.                          |
| <i>æ'.</i> Imm. sk.                   | Vienna.                                                     | Dr. R. Bowdler<br>Sharpe [P.]          |
| <i>æ''.</i> ♀ imm. sk.                | Hungary, Aug. 21.                                           | Hungarian National<br>Museum [P.]      |
| <i>æ''.</i> ♂ ad. sk.                 | Lower Danube, Wallachia,<br>May.                            | Baron A. von Hügel<br>[P.]             |
| <i>d'.</i> Pull. sk.                  | S. Russia ( <i>Möschler</i> ).                              | Baron A. von Hügel<br>[P.]             |
| <i>e'.</i> Vix ad. sk.                | Caspian Sea.                                                | Purchased.                             |
| <i>f'.</i> Imm. sk.                   | North Africa.                                               | J. Burton, Esq. [P.]                   |

|                                                  |                                                                   |                               |
|--------------------------------------------------|-------------------------------------------------------------------|-------------------------------|
| <i>g''</i> , <i>h''</i> . Ad. sk.                | Fayoom, Egypt, Feb., March<br>( <i>G. E. S.</i> ).                | Shelley Coll.                 |
| <i>i''</i> , <i>k''</i> . ♂ ♀ imm.<br>sk.        | Babylon ( <i>Commander Jones</i> ).                               | India Museum [P.].            |
| <i>l''</i> . ♂ ad. sk.                           | Muscat, Feb. 23.                                                  | Hume Coll.                    |
| <i>m''</i> . ♀ imm. sk.                          | Muscat, Dec. 3.                                                   | W. T. Blanford, Esq.<br>[P.]. |
| <i>n''</i> - <i>q''</i> . ♂ ♀ ad.<br>et imm. sk. | Muscat, Feb.                                                      | Dr. A. J. G. Jayskar<br>[P.]. |
| <i>-''</i> , <i>s''</i> . ♀ ad. sk.              | Argandab R., S. Afghanistan,<br>March.                            | Lt.-Col. Swinhoe<br>[P.].     |
| <i>t''</i> . Imm. sk.                            | Quetta, Nov. ( <i>Sir O. St. John</i> ).                          | Hume Coll.                    |
| <i>u''</i> . Imm. sk.                            | Kashgar ( <i>Dr. Bellin</i> ).                                    | India Museum [P.].            |
| <i>v''</i> . ♂ imm. sk.                          | R. Urunghu, Dzungaria, April<br>( <i>Prjevalsky</i> ).            | Seeböhm Coll.                 |
| <i>w''</i> <i>y'</i> . ♂ ♀ ad.<br>et ♀ imm. sk.  | Lob-nor, Feb., March ( <i>Prje-<br/>valsky</i> ).                 | Seeböhm Coll.                 |
| <i>z''</i> . Imm. sk.                            | Ladak ( <i>Strachey</i> ).                                        | India Museum [P.].            |
| <i>a'</i> . ♂ imm. sk.                           | Hurroo stream, Lower Hazara,<br>Feb. 26 ( <i>W. H. Unwin</i> ).   | Hume Coll.                    |
| <i>b'</i> . ♀ imm. sk.                           | Eastern Narra, Sind, March 10<br>( <i>S. Doig</i> ).              | Hume Coll.                    |
| <i>c'</i> . ♀ ad. sk.                            | Karachi Harbour, Feb. 19<br>( <i>E. A. Butler</i> ).              | Hume Coll.                    |
| <i>d'</i> , <i>e'</i> . ♀ vix ad.<br>sk.         | Near Burr, 49 miles from Aj-<br>mere, January 9.                  | Hume Coll.                    |
| <i>f'</i> . ♂ imm. sk.                           | Sambhur, March 15 ( <i>R. M.<br/>Adam</i> ).                      | Hume Coll.                    |
| <i>g'</i> , <i>h'</i> . Imm. sk.                 | Sirza, Oct.                                                       | Hume Coll.                    |
| <i>i'</i> . Ad. sk.                              | Masuri ( <i>W. E. Brooks</i> ).                                   | Hume Coll.                    |
| <i>k'</i> . Ad. sk.                              | Sutlej, below Koteghur, March.                                    | Hume Coll.                    |
| <i>l'</i> . ♂ ad. sk.                            | Sultanpur, Gurgaon Dist.,<br>Nov. 5 ( <i>W. N. Chill</i> ).       | Hume Coll.                    |
| <i>m'</i> . ♂ imm. sk.                           | Mainpuri Canal, Jan. 21 ( <i>A.<br/>Anderson</i> ).               | Hume Coll.                    |
| <i>n'</i> - <i>q'</i> . Ad. et<br>imm. sk.       | Etawah.                                                           | Hume Coll.                    |
| <i>r'</i> . Imm. sk.                             | Oudh, Nov.                                                        | Hume Coll.                    |
| <i>s'</i> - <i>v'</i> . Imm. sk.                 | Nepal ( <i>B. H. Hodgson</i> ).                                   | India Museum [P.].            |
| <i>w'</i> - <i>f'</i> . Ad. et<br>imm. sk.       | Sikhim, Feb.-April, Oct.-Dec.<br>( <i>L. Mandelli</i> ).          | Hume Coll.                    |
| <i>g'</i> - <i>n'</i> . Ad. et<br>imm. sk.       | Native Sikhim, Jan., March,<br>Aug., Nov., Dec. ( <i>L. M.</i> ). | Hume Coll.                    |
| <i>o'</i> . ♂ imm. sk.                           | Assam, March ( <i>A. W. Chen-<br/>nell</i> ).                     | Tweeddale Coll.               |
| <i>p'</i> . Imm. sk.                             | Assam ( <i>McClelland</i> ).                                      | India Museum [P.].            |
| <i>q'</i> - <i>s'</i> . ♂ vix ad.<br>et imm. sk. | Sittang R., July, Aug.                                            | E. W. Oates, Esq.<br>[C.].    |
| <i>t'</i> . ♂ ad. sk.                            | Lower Pegu, Aug. 29.                                              | E. W. Oates, Esq.<br>[C.].    |
| <i>u'</i> . ♂ imm. sk.                           | Khykehto, Tenasserim, Jan. 31<br>( <i>W. Davison</i> ).           | Hume Coll.                    |
| <i>r'</i> , <i>w'</i> . Imm. sk.                 | Thatone, Sept. 20.                                                | Hume Coll.                    |
| <i>x'</i> . ♂ ad. sk.                            | Keddah, Malay Peninsula<br>( <i>Dr. Cantor</i> ).                 | India Museum [P.].            |
| <i>y'</i> . Imm. sk.                             | Malacca ( <i>Dr. Maingay</i> ).                                   | Tweeddale Coll.               |

|                                 |                                                                |                                |
|---------------------------------|----------------------------------------------------------------|--------------------------------|
| $z^4$ . ♀ imm. sk.              | Estuary of Jafna, Ceylon.                                      | Col. W. V. Legge<br>[P.].      |
| $a^5$ . Ad. sk.                 | Siam.                                                          | Tweeddale Coll.                |
| $b^5, c^5$ . Imm. sk.           | Cochin China, Dec.                                             | M. St. Pierre [P.].            |
| $d^5$ . ♂ vix ad. sk.           | Samma, Formosa, Jan. 27<br>( <i>P. A. Holst</i> ).             | Seebohm Coll.                  |
| $e^5$ . ♀ imm. sk.              | China.                                                         | J. R. Reeves, Esq.<br>[P.].    |
| $f^5, g^5$ . Ad. et<br>imm. sk. | Amoy, China, Oct., Dec. ( <i>R. Swinhoe</i> ).                 | Seebohm Coll.                  |
| $h^5$ . Pull. sk.               | Chefoo, June 20 ( <i>R. S.</i> ).                              | Seebohm Coll.                  |
| $i^5$ . Imm. sk.                | Tsu-shima, Nov. 6 ( <i>P. A. Holst</i> ).                      | Seebohm Coll.                  |
| $k^5$ . Ad. sk.                 | Japan.                                                         | J. Arnott, Esq. [C.].          |
| $l^5, m^5$ . Ad. et<br>imm. sk. | Yokohama ( <i>H. Pryer</i> ).                                  | Seebohm Coll.                  |
| $n^5$ . ♀ imm. sk.              | Mouth of the Amur, E. Siberia,<br>March 29 ( <i>Dörries</i> ). | Seebohm Coll.                  |
| $o^5$ . Ad. sk.                 | Australia.                                                     | E. P. Ramsay, Esq.<br>[P.].    |
| $p^5-r^5$ . Ad. et<br>imm. sk.  | Port Jackson.                                                  | Australian Museum<br>[P.].     |
| $s^5$ . Imm. sk.                | Queensland.                                                    | Salvin-Godman Coll.            |
| $t^5$ . Imm. sk.                | New South Wales.                                               | Hume Coll.                     |
| $u^5$ . Imm. sk.                | South Australia.                                               | Sir George Grey<br>[P.].       |
| $v^5, w^5$ . Ad. sk.            | South Australia.                                               | Capt. Sturt, R. N.<br>[P.].    |
| $r^5$ . Ad. sk.                 | South Australia.                                               | Old Coll.                      |
| $y^5$ . Ad. sk.                 | Lewis, Tasmania.                                               | Gould Coll.                    |
| $z^5$ . Imm. sk.                | New Zealand.                                                   | Sir George Grey<br>[P.].       |
| $a^6$ . Ad. sk.                 | New Zealand.                                                   | New Zealand Co.<br>[P.].       |
| $b^6$ . Imm. sk.                | New Zealand.                                                   | Colonial Museum<br>[P.].       |
| $c^6$ . Ad. sk.                 | North Island, New Zealand.                                     | C. B. Horsbrugh,<br>Esq. [P.]. |
| $d^6$ . Imm. sk.                | Christchurch, South Island,<br>New Zealand, Feb.               | Baron A. von Hügel<br>[P.].    |
| $e^6$ . ♀ imm. sk.              | The Bluff, South Island, Jan.                                  | Baron A. von Hügel<br>[P.].    |
| $f^6$ . Ad. sk.                 | Chatham Is., Nov. 21.                                          | Colonial Museum [P.].          |
| $g^6$ . Skeleton.               | Christiansund, N. Norway,<br>Nov.                              | N. Hanson [C.].                |
| $h^6$ . Skeleton.               | Great Britain.                                                 | Seebohm Coll.                  |
| $i^6$ . Skeleton.               | New Zealand.                                                   | 'Challenger' Expe-<br>dition.  |
| $k^6$ . Skeleton.               |                                                                |                                |
| $l^6-o^6$ . Sterna.             | Europe.                                                        | Lefevre Coll.                  |
| $p^6-s^6$ . Skulls.             |                                                                |                                |

2. *Phalacrocorax filamentosus*. (Fig. 2, see p. 340.)

*Carbo filamentosus*, Temm. & Schl. Faun. Jap., Aves, p. 129 (1850).

*Carbo capillatus*, Temm. & Schl. Faun. Jap., Aves, pls. 83 & 83 n (1850).

*Graculus capillatus*, Reichenb. Natatores, pl. xxxv.<sup>d</sup> figs. 2744-5 (1850).

*Graculus capillimentosus*, Schl. fide Bonap. Cons. Av. p. 168 (1855).

*Phalacrocorax capillatus*, Bonap. Cons. Av. p. 168 (1855); Swinh.

*Ibis*, 1867, p. 390 [Amoy]; Tacx J. f. O. 1876, p. 202 [Ussuri];

*id.* Bull. Soc. Z. Fr. 1877, p. 41 [Abrek Bay, E. Siberia]; Seeböhm, *Ibis*, 1886, p. 271; *id.* B. Japan, p. 209, fig. (1890).

*Phalacrocorax carbo*, Swinh. (nec Linn.) *Ibis*, 1860, p. 68 [Amoy].

*Phalacrocorax filamentosus*, Swinh. *Ibis*, 1861, p. 264 [Foochow].

*Adult in breeding-plumage*. General colour of plumage oil-green, shading into dark greenish blue on the head and neck; the wings, upper back, and scapulars of a more greenish-bronze tinge, and narrowly margined with very dark green. The white feathers bordering the gular pouch thickly mottled with dark greenish black; the head and neck partially concealed by long narrow white feathers; a large patch of white feathers on each flank. Total length about 33 inches, culmen 2.5-2.8, wing 12-13, tail 5.8, tarsus 2.4-2.6.

This species is most nearly allied to *P. carbo*, but may be distinguished at all ages by the shape of the bare space on the throat: in the present species the feathering extends forward beyond a line drawn at right angles to the commissure of the gape, while in *P. carbo* the feathering does not extend nearly to this line (see figs. 1 & 2, p. 340). The adult may be further easily distinguished by the mottled feathers bordering the throat, the colour of the scapulars and wing-coverts, which are greenish bronze instead of bronze-brown, and the oil-green colour of the underparts. Tail composed of 14 feathers.

Bill dark horn-brown; feet black (Temm. & Schl.).

*Adult in non-breeding plumage*. Resembles the above, but the white feathers on the head and neck are wanting.

*Birds in immature plumage*. Closely resemble the young of *P. carbo* of a similar age, but may always be distinguished by the shape of the feathering on the throat, and, in older specimens, by the colour of the scapulars and wing-coverts.

Bill yellowish horn-colour, blackish brown along the culmen, and yellow at the base of both mandibles; naked skin about the face bright orange-yellow. Inside of mouth yellowish flesh-colour. Iris yellow. Legs blackish brown with a purplish tinge, claws lighter (*R. Swinhoe*).

*Hab.* The coast of North-east Asia, from East Siberia to Amoy, S. China; Japan.

a. ♀ imm. sk.

Japan.

Purchased.

b. ♂ ad. sk.

Hakodadi, Japan, Feb. 23

Seeböhm Coll.

(Henson).

|                                        |                                                       |                       |
|----------------------------------------|-------------------------------------------------------|-----------------------|
| c, d. Ad. et imm. sk.                  | Hakodadi, winter ( <i>Blakiston</i> ).                | Seebohm Coll.         |
| e. Imm. sk.                            | Tsu-shima, Japan ( <i>Pryer</i> ).                    | Seebohm Coll.         |
| f. ♀ imm. sk.                          | Takeshiki, Tsu-shima, Jan.<br>( <i>P. A. Holst</i> ). | Seebohm Coll.         |
| g, h. ♂ imm. sk.                       | Nagasaki, Japan, Dec. 16.                             | F. Ringer, Esq. [P.]. |
| i-m. ♂ ♀ vix ad.,<br>imm., et juv. sk. | Chefoo, China, July, Aug.<br>( <i>R. Swinhoe</i> ).   | Seebohm Coll.         |
| n. ♂ imm. sk.                          | Amoy, China, Oct. ( <i>R. S.</i> ).                   | Salvin-Godman Coll.   |
| o-s. ♂ ad. et<br>imm. sk.              | Amoy, Feb., April, Dec.<br>( <i>R. S.</i> ).          | Seebohm Coll.         |

3. *Phalacrocorax lucidus*.

*Halieus lucidus*, *Licht. Verz. Doubl.* p. 86 (1823); *Reichenow, J. f. O.* 1877, p. 10 [Loango].

*Halicus* (*sic*) *lucidus*, *J. E. Gray in Griff. ed. Cuv.* iii. p. 592 (1829).

*Carbo melanogaster*, *Cuv., Lesson, Traité d'Orn.* p. 604 (1831) [Africa]; *Pucheran, Rev. et Mag. Zool.* 1850, p. 537; *Hartert, J. f. O.* 1886, p. 612 [Los I.].

*Carbo macrorhynchos*, *Lesson, Traité d'Orn.* p. 604 (1831); *Pucheran, Rev. et Mag. Zool.* 1850, p. 628 [Cape of Good Hope].

*Phalacrocorax lugubris*, *Rüpp. Vög. N.O.-Afr.* pp. 134, 140, pl. 50 (1845) [Abyssinia and Shoa]; *Heugl. Vög. N.O.-Afr.* p. 72 (1856); *Speke, Ibis*, 1860, p. 248 [Bunder Goree, Somali].

*Phalacrocorax lalandii*, *Pucheran, Rev. et Mag. Zool.* 1850, p. 630 [Cape of Good Hope].

*Graculus lucidus*, *Reichenb. Natatores*, pl. xxxiv. figs. 865-6 (1850); *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 12 (1863); *Layard, Ibis*, 1868, p. 120 [S. Africa]; *Finsch & Hartl. Vög. Ostaf.* p. 846 (1870); *G. R. Gray, Hand-l. B.* iii. p. 127 (1871); *Heugl. Orn. N.O.-Afr.* iii. p. 1490 (1873); *Fisch. u. Reich. J. f. O.* 1878, p. 247 [Tana]; *Bocage, Orn. Angola*, p. 521 (1881); *Fisch. J. f. O.* 1885, p. 114; *Matschie, J. f. O.* 1887, p. 137 [Tanganyika].

*Graculus lugubris*, *Reichenb. Natatores*, pl. xxxv.<sup>b</sup> figs. 2313-5 (1850).

*Phalacrocorax lucidus*, *Bonap. Consp. Av.* p. 170 (1855); *Hartl. P. Z. S.* 1881, pp. 953, 957 [Socotra]; *Sharpe's ed. Layard B. S. Afr.* p. 779 (1884); *id. Ibis*, 1892, p. 420 [Ripon Falls, Nile]; *Kuschel, J. f. O.* 1895, p. 83 [egg]; *W. L. Slater, Ibis*, 1896, pp. 521, 522 [Dassen I.]; *Alexander, Ibis*, 1898, pp. 105, 108, 114, 117 [Cape Verde Is.].

*Phalacrocorax melanogaster*, *Bonap. Consp. Av.* p. 170 (1855); *Hartl. Syst. Orn. W.-Afr.* p. 260 (1857).

*Graculus carbo*, *Layard (nec Linn.), B. S. Afr.* p. 380 (1867).

*Phalacrocorax delalandii*, *Heugl. Orn. N.O.-Afr.* iii. p. 1490 (1873).

*Phalacrocorax gutturalis*, *Reichenow, J. f. O.* 1892, pp. 5, 133; *id. Vög. Deutsch-O.-Afr.* p. 22 (1894) [Victoria Nyanza].

*Adult in breeding-plumage* (Cape Verde Is., April: *Mus. Boyd Alexander*). Forehead, top of the head, nape, back of the neck, middle of the upper back, lower back, rump, and upper tail-coverts black glossed with dark oil-green; the crown and back of the neck with thinly scattered white plumules, a patch of similar plumes on the flanks; cheeks, sides, and fore part of the neck and chest pure white, rest of the underparts black glossed with oil-green; wing-coverts, sides of the upper back, and scapulars bronze-brown,

margined with greenish black; quills and tail-feathers blackish; the outer webs of the secondaries glossed with pale bronze. Tail composed of 14 feathers.

*Adult male.* Total length about 32 inches, culmen 2.75, wing 12.8, tail 5.5, tarsus 2.4.

*Adult female.* Total length (measured in the flesh) 32.3 inches, culmen 2.45, wing 12.4, tail 5.5, tarsus 2.5.

*Adult in non-breeding plumage* (Port Elizabeth, Sept.: Rothschild Museum). Similar to the above, but the white plumules on the head, neck, and flanks are absent, and the feathers of the wing-coverts, upper back, and scapulars, &c., are of a paler, almost greyish bronze. This does not appear to be the result of wear, the feathers being apparently freshly moulted.

"Iris green; upper mandible black, lower fading into white at gape; pouch mottled olive-green and yellow; a yellow patch below each eye" (*F. J. Jackson*).

*A younger example* resembles the above, but the dark back of the neck is not nearly so clearly defined from the white sides, which are spotted with brown; and the bronze middles to the feathers of the middle of the back are not of so rich and dark a colour.

*In a still younger example* (Cape Verde Is., April: Mus. Boyd Alexander) the top of the head, back of the neck, and upper parts are mostly brownish grey, each feather of the back, wing-coverts, and scapulars with a blackish-brown margin; middle of the upper back, lower back, rump, upper tail-coverts, lesser upper wing-coverts, sides and flanks brownish black, glossed with oil-green; rest of underparts pure white, the fore part and especially the sides of the neck being faintly spotted with brown.

*In a quite young example* the brown spotting extends over the fore part of the neck and chest as well as the sides, and the wing-coverts, scapulars, quills, and tail-feathers are sharp-pointed and margined with buff at the extremity.

*Hab.* Africa south of about 12° N. lat; Socotra; Cape Verde Islands, and other small islands off the South African coast.

|                                    |                                                    |                             |
|------------------------------------|----------------------------------------------------|-----------------------------|
| <i>a b.</i> [♂] ad. et<br>imm. sk. | South Africa.                                      | Sir Andrew Smith<br>[P.]    |
| <i>c.</i> Imm. sk.                 | Potchefstroom.                                     | F. A. Barratt, Esq.<br>[P.] |
| <i>d.</i> ♀ imm. sk.               | Rio Coroca, Benguela, Jan.<br>( <i>Anchieta</i> ). | Shelley Coll.               |
| <i>e.</i> Imm. sk.                 | Kilimanjaro.                                       | Rev. W. Morris [P].         |

#### 4. *Phalacrocorax capensis*.

*Pelecanus capensis*, *Sparrman, Mus. Carls.* iii. pl. 61 (1788).

*Phalacrocorax capensis*, *G. R. Gray, List of B.* pt. iii. p. 185 (1844),  
*Gurney, Ibis*, 1864, p. 355 [Natal].

*Carbo cristatus*, *Pucheran (nec Gmel.)*, *Rev. et Mag. Zool.* 1850,  
p. 630 [Cape of Good Hope].

*Carbo graculus*, *Pucheran (nec Linn.)*, *Rev. et Mag. Zool.* 1850,  
p. 631 [Cape of Good Hope].

*Graculus capensis*, *Reichenb. Natatores*, pl. xxxiv. figs. 863-4 (1850);

*Adult in breeding-plumage.* Head, neck, lower back, rump, upper tail-coverts, and entire underparts black, glossed with dull purplish blue; wing-coverts, upper back, and scapulars dark bronze-green, each feather margined with deep steel-blue; head and neck with scattered white plumules; quills and tail-feathers black, with some greenish gloss. Tail composed of 14 feathers. " Iris bluish white; bill pale, dusky on the ridge; naked gular skin yellow; tarsi and feet black." Total length about 24 inches, culmen 2·2, wing 9·9–10·2, tail 4–4·2, tarsus 2·1.

*Young in first autumn plumage.* Is much like the young of *P. graculus* at a similar stage, but the underparts are brown.

*Hab.* South Africa, extending northwards on the South-east to Natal, and on the South-west as far north as Landana.

- |                      |                                                                    |                        |
|----------------------|--------------------------------------------------------------------|------------------------|
| a. Ad. sk.           | [Africa.]                                                          |                        |
| b. Vix ad. sk.       | Mayumba River, Landana,                                            | Dr. R. Bowdler Sharpe  |
|                      | Aug. ( <i>L. Petit</i> ).                                          | [P.]                   |
| c-e. Ad. et imm. sk. | South Africa.                                                      | Sir A. Smith [P.].     |
| f. ♀ imm. sk.        | Simons Bay, Oct. 2.                                                | Earl of Crawford [P.]. |
| g. Vix ad. sk.       | [Japan !!]                                                         | Leiden Museum [P.].    |
|                      | [A typical specimen of <i>P. tenuirostris</i> , Temm. & Schl.      |                        |
|                      | See MS. note by G. R. Gray in Gray, List of Birds, p. 184 (1844).] |                        |

*Pelecanus gaimardi*, *Garnot, Voy. Coquille*, p. 601, pl. 48 (1826).  
*Phalacrocorax cirriger*, *King, Zool. Journ.* iv. p. 103 (1828) [Straits of Magellan].  
*Pelicanus goemardi*, *J. E. Gray, in Griff. ed. Cur.* iii. p. 592 (1829).  
*Carbo gaimardi*, *Lesson, Traité d'Orn.* p. 605 (1831) [Peru]; *Cassin, U.S. Expl. Exped., Orn.* p. 376 (1859) [Chili & Peru].  
*Phalacrocorax gaimardi*, *Fraser, P. Z. S.* 1843, p. 119 [Valparaiso]; *G. R. Gray, List of B.* pt. iii. p. 186 (1844); *Salvin, P. Z. S.* 1883, p. 427 [Peru]; *Tacz. Orn. Pérou*, iii. p. 431 (1886); *Oustal. Miss. Cap Horn*, vi. *Zool.* p. B 156 (1891); *James, N. List Chil. B.* p. 8 (1892); *Berlepsch & Stolz. P. Z. S.* 1892, p. 399 [Peru]; *Lane, Ibis*, 1897, p. 187, fig. [Corral, Chili].  
*Halæus gaimardii*, *Tschudi, Faun. Peru., Orn.* p. 313 (1845); *id. J. f. O.* 1856, p. 190.  
*Graculus gaimardi*, *Gay, Hist. Chili, Zool.* i. p. 489 (1847); *Reichenb.*



*Natatores*, pl. xxxiii. fig. 370 (1850); *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 22 (1863); *G. R. Gray, Hand-l. B.* iii. p. 129 (1871); *Tacz. P. Z. S.* 1874, p. 558 [Central Peru].

*Sticticarbo gaimardi*, *Bonap. Conspect. Ac.* p. 174 (1855).

*Haliastur cirrigor*, *Burmeister. An. Mus. Nac. Buenos Ayres*, iii. entrega décimaquinta, p. 249 (1888) [Patagonia].

*Adult.* Head, neck, lower back, rump, and upper tail-coverts dark smoky grey; chest and rest of underparts paler: an elongate white patch on each side of the neck; sides of the upper back, wing-coverts, and scapulars silvery grey towards the extremity and rather widely margined with brownish black; quills and tail-feathers brownish black. Behind the eye a scattered patch of white plumules, and a few similar feathers down the front of the neck; these disappear after the breeding-season. Tail composed of 14 feathers. "Culmen cadmium-yellow, greenish brown along the top, and shading into orange-vermilion towards the base and on the bare patch in front of the eye; mandible similar, but less brightly coloured; iris grey; legs, feet, and webs bright coral-red; claws black" (*A. A. Lane*). Total length about 28 inches, culmen 2.2-2.35, wing 9.5-9.9, tail 4-4.1, tarsus 1.9, outer toe and claw 3.7.

*An immature specimen* has the general colour of the upper parts dark brown, the quills pointed and tipped with brownish white; wing-coverts and underparts mixed with pale brownish-white feathers. The white patches on the sides of the neck are, however, well-developed, and many feathers of the adult plumage are found on the upper back and scapulars.

*Hab.* Pacific coast of South America from Peru to the Straits of Magellan.

|                           |                                                            |                                                                                               |
|---------------------------|------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| a. Ad. sk.                | S. America.                                                | Purchased.                                                                                    |
| b. Ad. sk.                | Coast of Peru.                                             | Salvin-Godman Coll.                                                                           |
| c. Ad. sk.                | Coast of Peru.                                             | Howard Saunders, Esq.<br>[P.]                                                                 |
| d. Ad. sk.                | Peru.                                                      | Rev. W. Hennah [P.]                                                                           |
| e. Ad. sk.                | San Lorenzo Island, Peru ( <i>Admiral A. H. Markham</i> ). | Salvin-Godman Coll.                                                                           |
| f. Ad. sk.                | Iquique, Peru ( <i>H. Rowland</i> ).                       | Salvin-Godman Coll.                                                                           |
| g. ♂ ad. sk.              | Chili.                                                     | Salvin-Godman Coll.                                                                           |
| h, i. Ad. sk.             | Valparaiso                                                 | Capt. Brett [P.]                                                                              |
| k-m. ♀ ad. et<br>imm. sk. | Corral, Chili, Nov. ( <i>A. A. Lane</i> ).                 | Berkeley James Bequest.                                                                       |
| n. Ad. sk.                | Straits of Magellan ( <i>Capt. P. P. King</i> ).           | The Admiralty [P.]                                                                            |
| o. Ad. sk.                | Port St. Julian.                                           | (Type of <i>Phalacrocorax cirrigor</i> , King)<br>Sir W. Burnett & Capt<br>Fitzroy, R.N. [P.] |

## 6. *Phalacrocorax punctatus*.

Spotted Shag, *Lath. Gen. Syn.* iii. pt. ii. p. 602 (1785); *id. ibid. Suppl.* i. p. 279 (1787); *id. Gen. Hist. B.* x. p. 427, pl. 182 (1824).

Spotted Pelican, *Lath. Gen. Syn.* iii. pt. ii. pl. civ. (1785).

*Pelecanus punctatus*, *Sparrrm. Mus. Carls.* i. pl. 10 (1786) [Queen Charlotte Sound, New Zealand]; *Gmel. S. N.* i. pt. ii. p. 574

- (1788); *Lath. Ind. Orn.* ii. p. 889 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 50 (1790); *Forst. Icon. ined.* pl. 103; *id. Descr. Anim.* p. 104 (1844).
- Pelecanus nævius*, *Gmel. S. N.* i. pt. ii. p. 575 (1788); *Bonnat. Tabl. Encycl. Méth.* i. p. 50, pl. xiv. fig. 1 (1790); *Dumont, in Levrault's Dict. Sci. Nat.* x. p. 453 (1818).
- Hydrocorax dilophus*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 85 (1817); *id. Gal. Ois.* ii. p. 189 (1825) [descr. only].
- Phalacrocorax punctatus*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 88 (1826); *G. R. Gray, List of B.* pt. iii. p. 186 (1844); *Buller, B. N. Zeal.* p. 335, pl. [ad. et imm.] (1873); *Hutton, Ibis*, 1874, p. 42; *Buller, Ibis*, 1874, p. 121; *id. Man. B. N. Zeal.* p. 95, pl. xxxv. (1882); *id. B. N. Zeal.* 2nd ed. ii. p. 164, pl. xxxix. fig. 1 (1888); *Kirk, Tr. N. Z. Inst.* xx. p. 30 (1888); *id. Ibis*, 1888, p. 43 [North I., N. Zealand]; *McLean, Ibis*, 1889, pp. 299-302 [breeding habits at Cape Kidnappers, N. Zealand].
- Graculus punctatus*, *G. R. Gray, Voy. Erebus & Terror, Birds*, p. 20 (1845); *Reichenb. Natatores*, pl. xxxv. fig. 871 (1850); *G. R. Gray, Ibis*, 1862, p. 252; *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 21 (1863); *Finsch, J. f. O.* 1870, p. 376 [Banks Peninsula]; *G. R. Gray, Hand-l. B.* iii. p. 129 (1871); *v. Pelz. Ibis*, 1873, p. 53; *Finsch, J. f. O.* 1874, pp. 174, 215; *id. Ibis*, 1882, p. 402 [N. Zealand].
- Graculus nævius*, *Reichenb. Natatores*, pl. xxxiii. fig. 369 (bad) (1850).
- Sticticarbo punctatus*, *Bonap. Consp. Av.* p. 174 (1855).
- Pelecanus cirrhatus*, *Ellman, Zool.* 1861, p. 7472.

*Adult in breeding-plumage.* Crown of the head and long semi-erect crests on the forehead and occiput greyish black, with some steel-blue gloss; back of the neck black glossed with greenish blue; sides of the head, chin, throat, and fore part of the neck sooty-black, with a slight gloss shading into pale grey on the base of the neck and rest of underparts; two white stripes commence at the base of the bill, and passing above the eye are continued down the sides of the neck to the shoulder; they are widest immediately behind the head and gradually become narrower on the basal half of the neck; upper back, scapulars, and wing-coverts brownish grey, each feather with a round black spot at the extremity; lower back, rump, upper tail-coverts, flanks, lower half of belly, and under tail-coverts black glossed with dark greenish blue; quills dark greyish brown; tail-feathers black. A number of narrow white feathers are conspicuously scattered on the dark part of the head, neck, lower back, and vent. The longest feathers of the crest on the fore part of the head measure less than 1·5 inch, while those of the occipital crest measure more than 2 inches. Tail composed of 12 feathers. "Iris green; naked skin in front of the eyes and gular pouch dark blue; bill brownish yellow, horn-colour towards the tip; legs, feet, and webs bright orange-yellow" (*Buller*). Total length about 29 inches, culmen 2·35-2·55, wing 9·2-9·8, tail 3·4-3·7, tarsus 2·3, outer toe and claw 3·5.

*Adult in non-breeding plumage.* The white plumes on the head, neck, lower back, and rump disappear; apparently the crests are retained throughout the year, though, according to Sir W. Buller, they are larger and more conspicuous in the breeding-season.

In one fully adult specimen just coming into breeding-plumage, the whole of the feathers on the top of the head are white with dark tips; both crests are imperfect and in moult, many of the feathers being half-grown.

*Immature.* Top of the head, back of the neck, lower back, rump, upper tail-coverts, and flanks dark smoky-brown with a slight greenish gloss; back and scapulars smoky-brown, each feather with a dark spot and marginal band; wing-coverts paler; sides of the head, chin, throat, and underparts shining greyish white.

*Hab.* Coasts of New Zealand.

|                       |                                            |                                   |
|-----------------------|--------------------------------------------|-----------------------------------|
| a. Imm. sk.           | New Zealand.                               | Sir Samuel Scott [P.].            |
| b. Ad. sk.            | New Zealand.                               | New Zealand Co. [P.].             |
| c. Ad. sk.            | New Zealand.                               | Purchased.                        |
| d. Ad. sk.            | New Zealand.                               | Colonial Museum, Wellington [P.]. |
| e, f. Ad. et imm. sk. | New Zealand.                               | Sir G. Grey [P.].                 |
| g. ♂ ad. sk.          | New Zealand.                               | Museum of Economic Geology [P.].  |
| h, i. Ad. et imm. sk. | Christchurch, S. Island, New Zealand, Feb. | Baron A. von Hügel [P.].          |
| k. Ad. sk.            | Akarua Head, S. Island, Aug. 2.            | Tweeddale Coll.                   |
| l, m. ♂ imm. sk.      | Dunedin, S. Island, Aug. & Dec.            | Baron A. von Hügel [P.].          |
| n, o. ♂ ♀ imm. sk.    | Port Cooper, New Zealand (F. Strange).     | Capt. Stokes, R.N. [P.].          |

#### 7. *Phalacrocorax featherstoni*.

*Graculus* sp., *Finsch, J. f. O.* 1872, p. 274 [Chatham Is.].

*Graculus africanus*, *Hutton (nec Gmel.)*, *Ibis*, 1872, p. 249 [Chatham Is.]; *Trarers, Tr. N. Z. Inst.* v. p. 221 (1873) [Pitt I.].

*Phalacrocorax africanus*, *Hutton (nec Gmel.)*, *Tr. N. Z. Inst.* v. p. 224 (1873) [Chatham Is.].

*Phalacrocorax featherstoni*, *Buller, Ibis*, 1873, p. 90 [Chatham Is.]; *id. B. N. Zeal.* p. 338, pl. (1873); *id. Mun. B. N. Zeal.* p. 96, pl. xxxvi. (1882), *id. B. N. Zeal.* 2nd ed. ii. p. 166, pl. xxxix. fig. 2 (1888) [Chatham Is.]; *Forbes, Ibis*, 1893, p. 533.

*Graculus featherstoni*, *Finsch, J. f. O.* 1874, pp. 174, 215 [New Zealand!].

*Adult in breeding-plumage.* Head, both crests, chin, throat, upper part of the fore-neck, entire back of the neck, lower back, rump, upper tail-coverts, vent, and under tail-coverts black glossed with dark greenish blue; upper back, wing-coverts, and scapulars deep brownish grey, with an oil-green gloss, each feather with a triangular black spot at the extremity; rest of underparts dark silvery grey; quills brownish black; tail-feathers black. Dark parts of the head and neck ornamented with scattered white plumes. The longest feathers of the crest on the fore part of the head measure less than 1.5 inch, while those of the occipital crest measure 2 inches. The crests are apparently retained throughout the year, while the

white plumes are dropped after the breeding-season. Tail composed of 12 feathers. Iris pale green; bill dark brown; naked skin round eye and on throat purplish grey (?); legs and feet orange-yellow.

*Adult male.* Total length 25 inches, culmen 2-2.15, wing 9.4, tail 3.9, tarsus 2, outer toe and claw 3.3.

*Adult female.* Total length about 21 inches, culmen 1.8, wing 8.6, tail 3.5, tarsus 1.85, outer toe and claw 3.1.

*Hab.* Chatham Islands.

*a-e.* ♂ ♀ ad. et pull. sk. Chatham Is. (*W. Hawkins*). Dr. H. O. Forbes [C].

### 8. *Phalacrocorax perspicillatus*.

? Red-faced Shag, *Lath. Gen. Syn.* iii. pt. ii. p. 601 (1785); *id. Gen. Hist. B.* x. p. 426 (1824).

*Pelecanus urile*, *Gmel. S. N.* i. pt. ii. p. 575 (1788) [part]; *Lath. Ind. Orn.* ii. p. 888 (1790).

*Phalacrocorax perspicillatus*, *Pallas, Zoogr. Rosso-As.* ii. p. 305 (1811); *Gould, Zool. Voy. Sulph.* p. 49, pl. xxxii. (1844); *Bonap. Conspect. Av.* p. 167 (1850); *Elliot, B. N. Amer.* ii. pl. l. (1869); *Tacz. Bull. Soc. Z. Fr.* 1877, p. 41; *Stejn. Proc. U.S. Nat. Mus.* vi. p. 65 (1883); *Coues, Key N. Am. B.* 2nd ed. p. 723 (1884); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 164, fig. (1884); *Stejn. Bull. U.S. Nat. Mus.* no. 29, p. 180 (1885); *id. Proc. U.S. Nat. Mus.* xii. pp. 83-94, pls. ii.-iv. [osteology] (1889); *Allen, Auk*, vii. p. 276 (1890); *A. O. U. Check-l.* 2nd ed. p. 327 (1895); *Ridgw. Man. N. A. B.* p. 81 (1896) [14 tail-feathers!].

*Hydrocorax urile*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 89 (1817).

*Phalacrocorax urile*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 86 (1826).

*Graculus urile*, *Reichenb. Natatores*, pl. xxxv.<sup>b</sup> figs. 2311-12 (1855).

*Graculus perspicillatus*, *Baird, B. N. Amer.* p. 877 (1860); *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 17 (1863) [Sitka]; *G. R. Gray, Hand-l. B.* iii. p. 127 (1871); *Coues, Key N. Am. B.* p. 304 (1872); *Finsch, Abh. Ver. Brem.* iii. p. 85 (1873).

*Adult in breeding-plumage.* Much like *P. bicristatus* in general appearance, but very much larger. Forehead naked; feathers of the face and the two tuft-like crests on the crown and nape shining bronze-purple; back of the head and upper part of the neck bronze oil-green, shading into dark bluish green on the lower part of the neck; head and upper part of the neck ornamented with long scattered hair-like feathers of a pale yellowish-white colour; base of neck, interscapular region, and chest dark bronze-green, shading into deep greenish blue on the rest of the upper and under parts; scapulars and wing-coverts deep purple; quills and tail-feathers black, the shafts of the latter pale horny white on the upper surface, shading into blackish towards the extremity. A large patch of white feathers on each flank. Tail composed of 12 feathers. Bill blackish, lighter at the tip; naked skin on the throat apparently orange, that of the forehead and lores dark; a patch of thick yellowish-white skin

surrounds the eye. According to Pallas, the naked skin around the base of the bill is varied with vermilion, blue, and white, as in the Turkey, and about the eyes there is a kind of "spectacles" of thick white skin, 6 lines broad. The weight is 12-14 pounds, and the female is smaller and devoid of the crests and "spectacles"! Total length about 38 inches, culmen from feathers on forehead 2.9, from gape 4, wing 13.5, tail 7.2, tarsus 2.8, outer toe and claw 4.7.

*Hab.* Bering Island, Kamtschatka Sea. Probably extinct.

|            |                  |                                 |
|------------|------------------|---------------------------------|
| a. Ad. sk. | [Bering Island.] | Gould Coll.                     |
| b. Ad. sk. | [Bering Island.] | Capt. Sir E. Belcher, R.N. [P.] |

### 9. *Phalacrocorax bicristatus*.

Red-faced Corvorant, *Pennant, Arct. Zool.* ii. p. 584 (1785).

? Violet Corvorant, *Pennant, Arct. Zool.* ii. p. 584 (1785) [Kamtschatka]; *Latham, Gen. Syn.* iii. pt. ii. p. 600 (1785).

\*? *Pelecanus violaceus*, *Pennant, Arct. Zool.* ii. p. 584 (1785) [Kamtschatka], *Gmel. S. N.* i. pt. ii. p. 575 (1788); *Lath. Ind. Orn.* ii. p. 888 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 51 (1790).

*Pelecanus urile*, *Gmel. S. N.* i. pt. ii. p. 575 (1788) [part]; *Bonnat. Tabl. Encycl. Méth.* i. p. 50 (1790).

*Phalacrocorax bicristatus*, *Pallas, Zoogr. Rosso-As.* ii. p. 301, pl. lxxv. fig. 2 (1811); *Tacz. Bull. Soc. Z. Fr.* 1877, p. 41 [Abrek Bay, E. Siberia]; *Blakist. & Pryer, Tr. As. Soc. Jap.* x. p. 102 (1882) [Kurile Is.]; *Nelson, Cruise 'Corwin,'* p. 103 (1883); *Coues, Key N. Am. B.* 2nd ed. p. 728 (1884); *Seebohm, Ibis*, 1885, p. 271; *Matsch. u. Ziemer, J. f. O.* 1885, p. 192 [Bering Sea]; *Seebohm, B. Japan*, p. 211, fig. (1890).

*Hydrocorax violaceus*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 91 (1817).

Violet Shag, *Latham, Gen. Hist. B.* x. p. 425 (1824).

*Phalacrocorax violaceus*, *Steph. in Shaw's Gen. Zool.* xiii pt. i. p. 86 (1826); *G. R. Gray, List of B.* pt. iii. p. 186 (1844); *Hartl. J. f. O.* 1883, p. 285 [Portage Bay, Alaska]; *Tacz. Bull. Soc. Z. Fr.* 1883, p. 342 [Kamtschatka].

*Graculus bicristatus*, *Reichenb. Natatores*, pl. xxiv.\* figs. 2740-41 (1850); *Baird, Tr. Chicago Acad.* i. p. 321, pl. xxxiii. (1869) [Kadiak]; *Dall & Bann. Tr. Chicago Acad.* i. p. 302 (1869) [Alaska]; *Coues, Key N. Am. B.* p. 304 (1872); *Tacz. J. f. O.* 1876, p. 203 [Ussuri].

*Urile bicristatus*, *Bonap. Conspect. Ar.* p. 175 (1855).

*Graculus violaceus*, *G. R. Gray, Hand-l. B.* iii p. 128 (1871).

*Phalacrocorax urile*, *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 162, fig. (1884); *Stejn. Bull. U.S. Nat. Mus.* no. xxix. p. 181, pl. viii. figs. 2, 3 (1885); *Ridgw. Man. N. A. B.* p. 80 (1887); *Nelson, Rep. N. H. Alaska*, no. iii. p. 65 (1887); *A. O. U. Check-l.* 2nd ed. p. 45 (1895).

*Adult in breeding-plumage.* Fore part of the forehead, as well as the lores and space surrounding the eyes, naked; rest of the head deep greenish blue, shading into steel-blue on the neck and with

\* It is impossible to say with certainty what bird Pennant intended to describe under the name *P. violaceus*, but he most probably referred to the present species. *P. urile*, Gmel., is partly founded on descriptions which can only apply to *P. perspicillatus*, and cannot be used. I have therefore made use of the next oldest name, *P. bicristatus*, Pall.

some purplish gloss; base of the neck, middle of the interscapular region, lower back, rump, upper tail-coverts, and entire underparts dark bronze-green with an oily gloss; sides of the upper back and scapulars rich greenish- and violet-bronze, changing to dark *purple-bronze*. Two semi-erect tuft-like crests, of a dark oily bronze-green, the first situated on the crown, the second on the nape; flanks with a large patch of white feathers. Neck and rump with scattered narrow white feathers\*.

*Adult in non-breeding plumage.* Similar to the above, but the flank-patches and narrow white plumes on the neck and rump are absent. The crests, though possibly dropped eventually, are certainly retained for an unusually long period. An adult female from the Kurile Islands in very worn breeding-plumage and in moult, though almost devoid of the white flank-patches, still retains both the tuft-like crests intact. Among the feathers of the crest on the crown a number of young feathers are making their appearance, and though the longest of these is less than half-grown it seems to be a long crest-feather. The fully-grown feathers of the crest are moreover very perfect and have the appearance of being fresh-moulted. If the crests should prove to be characteristic of the adult and not merely seasonal, the species is probably peculiar in this respect. In the closely allied *P. pelagicus* the crests are certainly shed after the breeding-season.

Tail composed of 12 feathers.

Base of mandibles dull ashy blue, with a narrow orange stripe around it, but the borders of the naked membrane ill-defined (*W. H. Dall*): iris brown; gular pouch blue, bordered behind by purplish-red corrugations; lores, orbits, and naked frontal skin bright orange; legs and feet black (*Ridgway*).

*Adult male.* Total length about 30 inches, culmen 2.3, wing 11, tail 6.2, tarsus 2.15.

*Adult female.* Total length about 28 inches, culmen 2.15, wing 10.5, tail 5.9, tarsus 2.

*Immature.* Uniform dark brown, with some purplish gloss on the feathers of the scapulars; the fore part of the forehead thinly feathered to the base of the culmen.

*Hab.* Coasts of East Siberia, Kamtschatka, and the Kurile Islands to Alaska.

|                     | Culmen. | Wing. | Tail.     |                |                   |  |
|---------------------|---------|-------|-----------|----------------|-------------------|--|
| a. ♀ ad. sk.        | 2.1     | 10.5  | In moult. | Kurile Islands | (O. Seebohm Coll. |  |
|                     |         |       |           | <i>Snow</i> ). |                   |  |
| b. ♂ imm. sk.       | 2.0     | 10.6  | 6.2 worn. | Kurile Islands | (O. Seebohm Coll. |  |
|                     |         |       |           | <i>Snow</i> ). |                   |  |
| c, d. ♂ ♀ pull. sk. | ..      | ..    | ..        | Kurile Islands | (O. Seebohm Coll. |  |
|                     |         |       |           | <i>Snow</i> ). |                   |  |
| e. Ad. sk.          | 2.3     | 11.0  | 6.2       | Kamtschatka.   | Purchased.        |  |

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\* We have not examined any specimen showing a trace of these narrow white feathers.

|               |           |          |               |                                                    |                                |
|---------------|-----------|----------|---------------|----------------------------------------------------|--------------------------------|
| f. Ad. sk.    | Culm. 205 | Wing 106 | Tail 59 worn. | Commander L. Bering Sea.                           | G. Barrett-Hamilton, Esq. [P.] |
| g. Imm. sk.   | 23        | 110      | 68            | Commander L. Bering Sea.                           | G. Barrett-Hamilton, Esq. [P.] |
| h. Imm. sk.   | 226       | 101      | 62            | Commander L. Bering Sea.                           | G. Barrett-Hamilton, Esq. P.   |
| i. ♀ ad. sk.  | 21        | 103      | 58 worn.      | St. Paul's Island, Alaska, May 29 (H. W. Elliott). | Salvin-Godman Coll.            |
| k. ♀ ad. sk.  | 215       | 104      | 59 worn.      | St. Paul's Island, Alaska, May 29 (H. W. E.).      | Salvin-Godman Coll.            |
| l. ♂ imm. sk. | 23        | 110      | 58 very worn. | Constantine Harbour, Alaska, July 27 (W. H. Dall). | Salvin-Godman Coll.            |
| m. Skeleton.  | .         | .        | .             | Kamtschatka.                                       | Brandt Coll.                   |

10. *Phalacrocorax pelagicus*.

*Phalacrocorax pelagicus*, Pallas, *Zoogr. Rosso-As.* ii. p. 303, pl. lxxvi. (1811); *Sicinh. Ibis*, 1874, p. 164; 1875, p. 138 [Chefoo], 1877, p. 147 [Hakodadi]; David & Oustal Ois Chine, p. 533 (1877); *Blakist. & Fryer, Ibis*, 1878, p. 216 [Japan], *id. Tr. As. Soc. Jap.* x. p. 102 (1882) [Kurile Is.]; *Tacz. Bull. Soc. Z. Fr.* 1883, p. 341 [Kamtschatka]; *Baird, Brenc. & Ridgw. Water-B. N. Amer.* ii. p. 160 (1884); *Turner, Auk*, ii. p. 158 (1885) [Nearer Is., Alaska]; *Stejn. Bull. U.S. Nat. Mus.* no. xxix. p. 187, pl. viii. fig. 1 (1885); *Seebohm, Ibis*, 1885, p. 271, *Idgw. Man. N. A. B.* p. 80 (1887); *Nelson, Rep. N. H. Alaska*, no. iii. p. 65 (1887); *Seebohm, B. Japan*, p. 210, fig. (1890); *Rickett, Ibis*, 1894, p. 226 [Foochow]; *A. O. U. Check-l.* 2nd ed. p. 44 (1895).

*Phalacrocorax resplendens*, Aud. *Orn. Biog.* v. p. 148, pl. 412. fig. 1 (1839) [Columbia River]; *id. B. Amer.* vii. p. 151, pl. 419 (1839).

*Phalacrocorax leuconotus*, Aud. *Orn. Biog.* v. p. 336 (1839) [mouth of Columbia River]; *Baird, Brenc. & Ridgw. Water-B. N. Amer.* ii. p. 161 (1884).

*Phalacrocorax urile*, G. R. Gray (*nec* Gmel.), *List of B.* pt. iii. p. 164 (1844).

*Graculus violaceus*, Reichenb. *Natatores*, pl. xxxv. fig. 2750 (1850); *Baird, B. N. Amer.* p. 881 (1860), *Schl. Mus Pays-Bas*, vi. *Pelec.* p. 17 (1863); *Brown, Ibis*, 1868, p. 426 [Vancouver]; *Dall & Bann. Tr. Chicago Acad.* i. p. 302 (1869) [St. George's I., Bering Sea]; *Coues, Key N. Am. B.* p. 304 (1872); *Finsch, Abh. Ver. Brem.* iii. p. 86 (1873); *Dall, Arif. Aleut.* p. 7 (1873) [Unalashka; Shumagins].

*Carbo hieristatus*, Temm. & Schl. (*nec* Pall.) *Faun. Jap., Aves*, p. 130, pls. 84 & 84 n (1850).

*Phalacrocorax hieristatus*, *Sicinh. (nec* Pall.) *Ibis* 1861 p. 408 [Amoy]; 1863, p. 434 [Formosa], *id. P. Z. S.* 1863, p. 325 [Amoy]; *Whately, Ibis*, 1867, p. 211 [Hakodadi].

*Graculus bairdii*, Gruber MS., Cooper, *P. Ac. Philad.* 1865, p. 5 [Farallone Is., California]; *Elliot, B. N. Amer.* ii. pl. xlix. (1869).



*Phalacrocorax æolus*, *Swinh. Ibis*, 1867, p. 395 [Amoy].

*Graculus bicristatus*, *G. R. Gray, Hand-l. B.* iii. p. 128 (1871); *Swinh. P. Z. S.* 1871, p. 420.

*Phalacrocorax violaceus*, *Nelson, Cruise 'Corwin,'* p. 103 (1883); *Coues, Key N. Amer. B.* 2nd ed. p. 729 (1884); *Goss, Auk*, i. p. 163 (1884) [Washington Co.]; *Matsch. u. Ziemer, J. f. O.* 1885, p. 192 [Norton Sound].

*Phalacrocorax pelagicus resplendens*, *Baird, Brew. & Ridgw. Water-B. N. Am.* ii. p. 160, 2 figs. (1884); *Ridgw. Man. N. A. B.* p. 80 (1887); *Blake, Auk*, iv. p. 329 (1887) [Santa Cruz I., Cal.]; *Bryant, P. Cal. Ac.* (2) ii. p. 257 (1890); *A. O. U. Check-l.* 2nd ed. p. 44 (1895).

*Phalacrocorax pelagicus robustus*, *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 160 (1884); *Ridgw. Man. N. A. B.* p. 80 (1887); *Nelson, Rep. N. H. Alaska*, no. iii. p. 65 (1887); *Palmer, Auk*, ix. p. 309 (1892) [Gray's Harbour, Washington Co.]; *A. O. U. Check-l.* 2nd ed. p. 44 (1895).

*Phalacrocorax violaceus bairdi*, *Coues, Key N. Am. B.* 2nd ed. p. 729 (1884).

*Phalacrocorax violaceus resplendens*, *Goss, Auk*, i. p. 163 (1884) [Washington Co.]; *Ridgw. Auk*, i. p. 165 (1884).

*Adult in breeding-plumage.* Very similar to the adult of *P. bicristatus*, but at once distinguished by having the feathering on the forehead continued to the base of the culmen; the neck strongly glossed with violet-purple; the sides of the upper back and scapulars greenish and violet-bronze changing to *bright metallic green*, and of a different tint to the lower back, rump, and underparts. Neck, lower back, and rump ornamented with narrow white plumes. "Iris yellowish green to deep sea-green; bill horny blackish brown, lighter at base; naked parts of face and throat dark greyish brown with brownish-orange or brownish-vermilion papillæ; feet black" (*L. Stejneger*).

*Adult in non-breeding plumage.* Similar to the above, but the tuft-like crests on the crown and nape, the white flank-patches, and the narrow white plumes on the neck, lower back, and rump, are absent.

Tail composed of 12 feathers.

Specimens from Eastern Asia and N.W. North America measure:—

*Adult male.* Total length about 30 inches, culmen 2, wing 10·8, tail 6·2, tarsus 2·1.

*Adult female.* Total length about 28 inches, culmen 2, wing 10·7–10·8, tail 6·2, tarsus 2·1.

Specimens from California measure:—

*Adult male.* Total length about 27·5 inches, culmen 1·85, wing 9·4, tail 5·5, tarsus 1·85.

*Adult female.* Total length about 26·5 inches, culmen 1·9, wing 9·6, tail 5·1 worn, tarsus 1·8.

*Immature.* Very similar to the immature of *P. bicristatus*, the whole plumage being of a darkish brown, but the back and scapulars are more or less glossed with dull green instead of purple.

Three subspecies of *P. pelagicus* are recognized by American ornithologists, viz:—

*P. pelagicus*.—*Hab.* Coast of Kamtschatka and Aleutian Islands; south in winter to Kuriles and Northern Japan.

*P. pelagicus robustus*.—*Hab.* Coast of Alaska, from Norton Sound, south to Washington Territory.

*P. pelagicus resplendens*.—*Hab.* Pacific Coast, from Washington Territory to Western Mexico (Maxatlan and Cape St. Lucas). See Ridgway, Man. N. Amer. B. 2nd ed. p. 80 (1896).

Of these, typical specimens of *P. robustus*, Ridgway, are absolutely identical with typical specimens of *P. pelagicus*, Pallas, from Kamtschatka, and it is incorrect to say that the former have the bill much stouter. Typical specimens of *P. resplendens*, Audubon, from the Pacific coast of N. America are certainly on the whole slightly smaller than the more northern representatives of the species, and in this respect they follow the general rule. It is, however, needless to separate them under a different name, for the plumage in all is absolutely identical and the differences in size are of no importance, since the extreme forms gradually merge into one another.

*Hab.* East coast of Asia from Kamtschatka to South China, to west coast of North America from Alaska to West Mexico.

|               | Culm.  | Wing.     | Tail.      |                                                                      |                                        |
|---------------|--------|-----------|------------|----------------------------------------------------------------------|----------------------------------------|
| a. Ad. sk.    | 2.0    | 10.9      | 5.8        | Amoy, Jan. ( <i>R. Swinhoe</i> ). (Type of <i>P. æolus</i> , Swinh.) | Seebohm Coll.                          |
| b. Ad. sk.    | 1.85   | 10.3      | 5.8 in     | Amoy, Jan. ( <i>R. S.</i> ).                                         | Seebohm Coll.                          |
|               |        | in moult. | moult.     |                                                                      |                                        |
| c. Ad. sk.    | 1.95   | 9.8       | 5.2 worn.  | Nagasaki.                                                            | F. Ringer, Esq. [P.]                   |
| d. Ad. sk.    | broken | 10.7      | 5.8        | Yokohama ( <i>H. Pryer</i> ).                                        | Seebohm Coll.                          |
| e. Imm. sk.   | 1.95   | 9.6       | 5.5        | Yokohama ( <i>H. Pryer</i> ).                                        | Seebohm Coll.                          |
| f. ♀ ad. sk.  | 2.0    | 10.8      | 6.2        | Hakodadi, Feb. 22 ( <i>Henson</i> ).                                 | Seebohm Coll.                          |
| g. ♀ imm. sk. | 2.05   | 10.1      | 5.3 worn.  | Hakodadi, Feb. 22 ( <i>Henson</i> ).                                 | Seebohm Coll.                          |
| h. Imm. sk.   | 2.1    | 10.7      | 6.2        | Hakodadi ( <i>Blakiston</i> ).                                       | Seebohm Coll.                          |
| i. ♀ imm. sk. | 1.95   | 9.7       | 5.8        | Hakodadi ( <i>Blakiston</i> ).                                       | Seebohm Coll.                          |
| k. Ad. sk.    | 2.0    | 10.6      | 5.6 worn.  | Sea of Okhotsk.                                                      | Purchased.                             |
| l. Ad. sk.    | 2.05   | 10.9      | 6.15 worn. | Kamtschatka.                                                         | Seebohm Coll.                          |
| m. Ad. sk.    | 1.7    | 9.2       | in moult.  | Commander I.                                                         | G. Barrett-                            |
| n. ♂ ad. sk.  | 1.7    | 9.8       | 5.5        | " June 23.                                                           | Hamilton, Esq.                         |
| o. ♀ ad. sk.  | 1.8    | 9.7       | 5.5        | " June 23.                                                           | [P.]                                   |
| p. Imm. sk.   | 2.0    | 10.7      | 6.4        | Kotzebue Sound.                                                      | Capt. Kellett & Lieut. Wood, R.N. [P.] |
| q. Imm. sk.   | 1.85   | 10.2      | 6.2        | St. Michael's, Alaska, Oct. 2 ( <i>E. W. Nelson</i> ).               | Salvin-Godman Coll.                    |
| r. ♂ imm. sk. | 1.85   | 10.3      | 6.5        | St. Michael's, Oct. 2 ( <i>E. W. N.</i> ).                           | Salvin-Godman Coll.                    |
| s. ♀ ad. sk.  | 1.8    | 9.3       | 5.0 worn.  | Constantine Harbour, Alaska, July 26 ( <i>M. Baker</i> ).            | Salvin-Godman Coll.                    |
| t. Ad. sk.    | 1.9    | 9.9       | 5.2        | N.W. North America.                                                  | Sir F. Belcher [P.]                    |

|               | Culm. | Wing. | Tail.          |                                        |                        |
|---------------|-------|-------|----------------|----------------------------------------|------------------------|
| u. Imm. sk.   | 1.85  | 9.8   | 5.6            | N.W. North America.                    | Purchased.             |
| v. Ad. sk.    | 1.9   | 10.2  | 5.4 worn.      | [California.]                          | Purchased.             |
| w. ♂ ad. sk.  | 1.85  | 9.4   | 5.5            | San Francisco, California (F. Gruber). | Salvin-Godman Coll.    |
| x. ♂ imm. sk. | 1.7   | 9.1   | 4.8 much worn. | Monterey, California, April 1.         | Mr. Alvin Seale [C.].  |
| y. Ad. sk.    | 1.85  | 9.4   | 5.1            | Santa Barbara Is., California.         | Salvin-Godman Coll.    |
| z. ♀ ad. sk.  | 1.9   | 9.6   | 5.1 worn.      | Farallone Is., June.                   | F. Gruber [C.].        |
| a'. Imm. sk.  | 1.85  | 9.6   | 5.4            | [Berkeley Sound, Falkland Is. !]       | Antarctic Exped. [C.]. |

Two specimens in the Rothschild Museum measure as follows:—

♂ ad. Culmen 2, wing 10.8, tail 6.2. Sitka, Alaska, Aug. 8.

♀ ad. Culmen 1.85, wing 10.7, tail 6.1. Sitka, Alaska, Aug. 8.

### 11. *Phalacrocorax penicillatus*.

*Carbo penicillatus*, Brandt, *Bull. Acad. St. Pétersb.* iii. p. 55 (1837); *Gamb. J. Acad. N. Sci. Philad.* (2) i. p. 227 (1849); *Newb. Rep. Explor. & Surv.* vi. pt. iv. p. 106 (1857).

*Phalacrocorax townsendi*, Aud. *Orn. Biog.* v. p. 150, pl. 412. fig. 2 (1839) [mouth of Columbia River]; *id. B. Amer.* vii. p. 149, pl. 418 (1839).

*Graculus townsendi*, Reichenb. *Natatores*, pl. xxxv. fig. 2752 (1850).

*Phalacrocorax penicillatus*, Heerm. *P. Ac. Philad.* vii. p. 178 (1854) [Ferrea Leones Is.\*]; Baird, Brew. & Ridgw. *Water-B. N. Amer.* ii. p. 158, fig. (1884); Coues, *Key N. Am. B.* 2nd ed. p. 728 (1884); Everm. *Auk*, iii. p. 89 (1886) [Ventura Co., Cal.]; Blake, *Auk*, iv. p. 329 (1887) [Santa Cruz I., Cal.]; Ridgw. *Man. N. A. B.* p. 79 (1887) [14 tail-feathers!], 2nd ed. p. 79 (1896) [14 tail-feathers!]; Bryant, *P. Cal. Ac.* (2) ii. p. 257 (1890); A. O. U. *Check-l.* 2nd ed. p. 44 (1895).

† *Urile penicillatus*, Bonap. *Consp. Av.* p. 175 (1855); Baird, *B. N. Amer.* p. 880 (1860).

*Carbo townsendii*, Newb. *Rep. Explor. & Surv.* vi. pt. iv. p. 107 (1857).

*Graculus penicillatus*, G. R. Gray, *Hand-l. B.* iii. p. 128 (1871); Coues, *Key N. Am. B.* p. 303 (1872).

*Adult in breeding-plumage.* Head and neck deep glossy purplish black, shading into very dark glossy green on the middle of the upper back, lower back, rump, and underparts of the body; feathers surrounding the naked throat vary from brownish white to nearly pure white; sides of the upper back, wing-coverts, and scapulars dark oily-green, with narrow greenish-black margins; quills and tail-feathers brownish black. No trace of a crest; a tuft of long white hair-like shafts on each side of the neck, commencing behind the ear; upper back and scapulars ornamented with similar hair-

\* Probably Farallone Is.

† Two species, *P. penicillatus* and *P. pelagicus*, are described under this title; the double crest and white flanks being characteristic of the latter species.

like feathers, but even longer than those on the neck and bearing narrow webs. Iris green; bill dusky grey; naked gular skin blue; legs and feet deep black.

*Adult in non-breeding plumage.* Similar to the above, but the white hair-like tufts on each side of the head and the white filaments on the back and scapulars absent.

Tail composed of 12 feathers\*.

*Adult.* Total length about 30 inches, culmen 2.65-3, wing 10.6-11.1, tail 4.4-4.7, tarsus 2.5.

*Hab.* Pacific coast of North America, from the mouth of the Columbia River to California.

|               | Culm. | Wing. | Tail. |                                                      |                                                                   |
|---------------|-------|-------|-------|------------------------------------------------------|-------------------------------------------------------------------|
| a. Ad. sk.    | 2.65  | 10.6  | 4.4   | California.                                          | Sir W. Burnett and<br>Capt. Fitzroy [P. 1.<br>Salvin-Godman Coll. |
| b. ♂ ad. sk.  | 3.0   | 11.1  | 4.7   | California.                                          |                                                                   |
| c. ♂ ad. sk.  | 2.9   | 11.2  | 4.65  | Monterey, California,<br>April 12.                   | Mr. Alvin Seale<br>[C.].                                          |
| d. ♂ ad. sk.  | 2.9   | 11.0  | 4.5   | Monterey, California,<br>August 3.                   |                                                                   |
| e. ♂ ad. sk.  | 2.6   | 11.0  | 4.7   | Monterey, California,<br>August 11.                  |                                                                   |
| f. ♀ ad. sk.  | 2.6   | 10.3  | 3.8   | Monterey, California,<br>May 4.                      |                                                                   |
| g. ♂ imm. sk. | 2.8   | 11.0  | 3.9   | Monterey, California,<br>May 9.                      |                                                                   |
| h. ♂ ad. sk.  | 2.75  | 10.6  | 4.6   | San Miguel I., Cali-<br>fornia (Capt. S.<br>Torrey). | Salvin-Godman Coll.                                               |

## 12. *Phalacrocorax graculus*.

Le petit Cormoran, *Brisson, Orn. vi.* p. 516 (1760); *Buffon, Hist. Nat. Ois. vii.* p. 319 (1781).

*Pelecanus graculus*, *Lin. S. N. i.* p. 217 (1766); *Gmel. S. N. i.* pt. ii. p. 574 (1788); *Lath. Ind. Orn. ii.* p. 887 (1790); *Bonnat. Tabl. Encycl. Meth. i.* p. 47 (1790); *Cuv. Règ. Anim., Ois. i.* p. 562 (1829).

Common Shag, *Latham, Gen. Syn. iii.* pt. ii. p. 598 (1785).

Crested Shag, *Latham, Gen. Syn. iii.* pt. ii. p. 600 (1785); *id. Gen. Hist. B. x.* p. 423 (1824).

*Pelecanus cristatus*, *Gmel. S. N. i.* pt. ii. p. 575 (1788); *Lath. Ind. Orn. ii.* p. 888 (1790); *Bonnat. Tabl. Encycl. Meth. i.* p. 49, pl. xv. fig. 2 (1790); *Dumont, in Levrault's Dict. Sci. Nat. x.* p. 452 (1818).

*Carbo graculus*, *Meyer & Wolf, Taschen. der Deuts. ii.* p. 578 (1810); *Lesson, Traité d'Orn. p.* 605 (1831); *Schinz, Nat. Abbild., Vog. p.* 384, pl. 132, fig. (1833); *Grondal, Ornith. ii.* p. 613 (1886) [Iceland]; *Gutke, Heligoland, p.* 542 (English ed. 1895).

\* Both in the *Water-Birds of North America*, ii. p. 145 (Synopsis) and in *Ridgway's Manual N. Amer. Birds*, 2nd ed. p. 79 (1896) the number of tail-feathers is stated to be 14, but in the former work under the description of the species, p. 158, the number is correctly given as 12. See also remarks by Coues, *Auk*, xiv. p. 316 (1897).

- Phalacrocorax graculus*, *Pallas, Zoogr. Rosso-As.* ii. p. 299 (1811); *Dumont, in Levrault's Dict. Sci. Nat.* x. p. 450 (1818); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 82 (1826); *Nutt. Man. Orn.* p. 484 (1834) [part., Europe: several species confounded]; *Keys. u. Blas. Wirbelth.* p. 233 (1840); *Démid. Voy. Russ. Mérid.* iii. p. 302 (1840); *G. R. Gray, List of B.* iii. p. 184 (1844); *Thomps. Nat. Hist. Irel.* iii. p. 250 (1851); *Macgill. Brit. B.* v. p. 392 (1852); *Brehm, Vogelfang,* p. 360 (1855); *Schl. Vog. Nederl.* p. 576, pl. 327 [immat.] (1858); *Smith. Ibis,* 1868, p. 458 [Portugal]; *Collett, Vid. Selsk. Forh. Christ.* 1868, p. 183; *Fritsch, Nat. Vög. Europa,* p. 451 (1870), *Atl.* pl. 53. fig. 4 (1871); *Gray, B. West. Scott.* p. 457 (1871); *Gould, B. Gt. Brit.* v. pl. 53 (1872); *Palmén, J. f. O.* 1876, p. 61 [Finland]; *Dresser, B. Europe,* vi. p. 163, pl. 389 (1879) [part]; *Irby, Ibis,* 1883, p. 190 [Santander]; *Saund. ed. Yarrell, Br. B.* iv. p. 151 (1884); *Seebohm, Hist. Brit. B.* iii. p. 656, pl. 34. fig. egg (1885); *Dixon, Ibis,* 1885, p. 91 [St. Kilda]; *Booth, Rough Notes,* iii. pt. xiv. (1887); *Saunders, Ill. Man. Brit. B.* p. 351 (1889); *Seebohm, Ibis,* 1890, p. 408 [Ireland]; *Turle, Ibis,* 1891, p. 8 [Blasket Is.]; *Lilford, Col. Fig. Br. B.* pt. xxii. (1892); *Seebohm, Ibis,* 1892, p. 28 [Heligoland]; *Blagg, Ibis,* 1893, p. 353 [Shetland]; *Pearson & Bidwell, Ibis,* 1894, p. 232 [N. Norway]; *Pearson, Ibis,* 1895, p. 247 [Iceland], 1896, p. 210 [Russian Lapland]; *Sharpe, Handb. B. Gr. Brit.* ii. p. 215, pl. lii. (1896); *Kolombatovic, MT. Orn. Wien,* xx. pp. 25-28 (1896).
- Crested Cormorant, *Pennant, Brit. Zool.* ii. p. 284, pl. xlvii. (1812).
- Hydrocorax graculus*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 87 (1817); *id. Faun. Franç.* p. 344 (1828).
- Hydrocorax cristatus*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 89 (1817); *id. Faun. Franç.* p. 345, pl. 145. fig. 1 (1828).
- Carbo cristatus*, *Temm. Man. d'Orn.* ii. p. 900 (1820), iv. p. 565 (1840); *Meyer u. Wolf, Tasch.* iii. p. 233 (1822); *Temm. Pl. Col.* v. pl. 119 [no. 322] (1825); *Werner, Atl. Ois. d'Eur., Ord.* 15, pl. 89 (1828); *Lesson, Traité d'Orn.* p. 604 (1831) [part].
- Haliaeetus graculus*, *Licht. Verz. Doubl.* p. 86 (1823); *Naum. Nat. Vög. Deutschl.* xi. p. 88, pl. 280 (1842); *Püssler, J. f. O.* 1853, p. 315 [Lapland]; *Rey, J. f. O.* 1872, p. 155 [Portugal].
- Shag, *Latham, Gen. Hist. B.* x. p. 419 (1824); *Yarrell, Hist. Brit. B.* iii. p. 378 (1843).
- Phalacrocorax cristatus*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 83 (1826); *Selby, Ill. Brit. Orn.* ii. p. 450, pl. 86 (1833); *Nutt. Man. Orn.* p. 486 (1834) [part; several species confounded]; *Nils. Skand. Faun.* ii. p. 479 (1835); *Gould, B. Eur.* v. pl. 410 (1837); *Körner, Skand. Fögl.* p. 21, pl. 59. fig. 3 (1839-46); *Keys. u. Blas. Wirbelth.* p. 233 (1840); *G. R. Gray, List of B.* pt. iii. p. 185 (1844); *Degl. Orn. Europ.* ii. p. 379 (1849) [part]; *Watters, N. Hist. B. Irel.* p. 237 (1853); *Jaubert & Lapomm. Rich. Orn.* p. 379 (1859); *Degl. & Gerbe, Orn. Europ.* ii. p. 354 (1867) [part]; *Marchand, Rev. Zool.* (3) iii. p. 142, pl. ii. (1875).
- Phalacrocorax brachyuros* (sic), *Brehm, Vög. Deutschl.* p. 822 (1831); *id. Vogelfang,* p. 360 (1855).
- Graculus linnæi*, *G. R. Gray, Gen. B.* iii. p. 667 (1845); *Reichenb. Natatores,* pl. xxxv.<sup>a</sup> (n) fig. 2647!! (1850); *More, Ibis,* 1865, p. 451 [Great Britain].
- Graculus cristatus*, *Reichenb. Natatores,* pl. xxxiii. figs. 366-68, pl. xxxiv. fig. 860, pl. xxxv.<sup>a</sup> (n) figs. 2645-6 (1850); *Bonap. Consp. Av.* p. 171 (1855); *Sundev. Sv. Fögl.* pl. lv. fig. 3 (1856); *Schl. Mus.*

*Pays-Bas*, vi. *Pelec.* p. 18 (1863) [part, a]; *Droste*, J. f. O. 1869, p. 389 [Faroes]; *G. R. Gray*, *Hand-l. B.* iii. p. 127 (1871); *Sunder.* *Ibis*, 1886, p. 457 [wing].

Shag or Green Cormorant, *Knox*, *Zool.* (2) i. pp. 243-257, 328-333 (1866) [Life-history].

*Adult in breeding-plumage* (February to May). Head and neck dark glossy green, shading into oily bronze-green on the rest of the upper and under parts; crown with a semi-erect crest, curved slightly forwards, the longest feathers measuring 2 inches; upper back, wing-coverts, and scapulars often inclining to purplish bronze, especially in slightly worn specimens, and narrowly margined with dark greenish-black; quills and tail-feathers black, with some green gloss. Tail composed of 12 feathers. Inside of mouth and round gape pale orange-yellow; naked skin of chin and throat black, thickly dotted with yellow; iris bright green; legs and feet blackish.

*Male*. Total length about 30 inches, culmen 2.5, wing 10.5, tail 5.4, tarsus 2.3.

*Female*. Total length about 30 inches, culmen 2.5, wing 10.3, tail 5.3, tarsus 2.3.

*Adult in non-breeding plumage* (August to November). Differs from the above in being devoid of a crest, and in having the feathers bordering the naked gular skin white or pale greyish white.

Towards the end of November, or the beginning of December, the gray feathers of the throat bordering the naked gular skin are shed and replaced by dark glossy green feathers, similar to those of the rest of the head and neck; and at the same time the crest begins to make its appearance, and is generally fully grown by the beginning of February.

The changes of plumage appear to be entirely produced by moult, which, in these birds, is remarkably irregular, and it is only during the breeding-season that no change takes place. In every other month some birds are to be found in moult.

An adult bird, shot on the 16th January, differs from specimens collected between the months of February and November in having the naked skin between the mandibles *pale pink* with chrome-yellow dots, and the skin at the angle of the gape chrome-yellow. This difference is no doubt merely individual.

*Nestling*. Covered with sooty-black down; naked skin on face and throat dark purplish black.

*In first autumn plumage*. Top of the head, back of the neck, and upper parts brown, with some oil-green gloss; feathers of the upper back and scapulars with dark brown submarginal bands and narrow pale margins, the longer scapulars and wing-coverts brown with pale brownish-white margins; chin and throat white; sides and front of neck, and sides of body brownish; middle of underparts whitish.

*In second autumn plumage*. Upper parts much darker and less brown; the upper back, wing-coverts, and scapulars interspersed

with dull bronze-green feathers with dark edges, very similar to those of the adult; underparts brown, darkest on the sides and greyest in the middle.

Iris pale brownish white, culmen blackish horn, cutting-edge of upper mandible and lower mandible pale pinkish brown; naked skin round gape pale dirty yellow; naked skin of the throat pale pinkish white; legs and feet blackish brown as in the adult, but the sides of the toes and webs and inner sides of the tarsi are mostly brownish white.

*In third autumn plumage.* Upper parts much like those of the adult but less pure and bright; underparts with remains of the brown plumage of the second autumn, thickly interspersed with the oil-green plumage of the adult.

Birds in this plumage probably breed for the first time in the following spring.

*Hab.* Coasts of Western Europe from Norway to Portugal, extending westwards to the British Isles, Faroes, and Iceland.

|                                |                                                               |                                         |
|--------------------------------|---------------------------------------------------------------|-----------------------------------------|
| a. Pull. st.                   | Orkney Is.                                                    | Purchased                               |
| b, c. ♂ ♀ ad. et<br>imm. sk.   | Orkney Is., May & June<br>(E. H.).                            | Hargitt Coll.                           |
| d. ♀ ad. sk.                   | Faroe Is., May 15 (H. C.<br>Müller).                          | Col. H. W. Feilden<br>[P.].             |
| e-x. ♂ ♀ ad. et<br>imm. sk.    | Loch Maddy, N. Uist, Outer<br>Hebrides, Nov.-April &<br>July. | Sir John Campbell-<br>Orde, Bart. [P.]. |
| y. Imm. sk.                    | Wick, Caithness, Scotland,<br>Aug. 30 (C. Marshall).          | Seeböhm Coll.                           |
| z-z'. ♂ ♀ imm.<br>sk.          | Cromarty Firth, Scotland,<br>May.                             | W. R. Ogilvie-Grant,<br>Esq. [P.].      |
| z'. Imm. sk.                   | Firth of Forth, April.                                        | Seeböhm Coll.                           |
| z', z'. ♀ imm. sk.             | Llandyssil, South Wales,<br>Feb. 19.                          | Col. L'Estrange [P.].                   |
| z', z'. ♂ ♀ ad. sk.            | St. Bride's, South Wales,<br>June 22.                         | Lord Kensington<br>[P.].                |
| z'-z'. ♂ ♀ ad. et<br>pull. st. | St. Bride's, South Wales,<br>June 22.                         | Lord Kensington<br>[P.].                |
| z'. ♂ ad. st.                  | Mouth of the R. Severn.                                       | T. White, Esq. [P.].                    |
| z'-z'. ♂ ♀ ad. et<br>imm. sk.  | Fowey, Cornwall, Aug.,<br>Sept.                               | Dr. A. Günther [P.].                    |
| z'. Ad. st.                    | Cornwall.                                                     | D. W. Mitchell, Esq.<br>[P.].           |
| z'. Imm. sk.                   | Plymouth.                                                     | F. Bond, Esq. [P.].                     |
| z'. ♀ imm. sk.                 | Torquay (J. Lloyd).                                           | Seeböhm Coll.                           |
| z'. ♂ vix ad. sk.              | Christiansund, N. Norway,<br>Sept. 20.                        | N. Hanson [C.].                         |
| z'. Ad. sk.                    | Coruña, N. Spain.                                             | Dr. L. V. Seoane<br>[P.].               |
| z'. Skeleton.                  | England.                                                      | Purchased.                              |
| z'-z'. Skeletons.              | Christiansund, N. Norway,<br>Nov. & Dec.                      | N. Hanson [C.].                         |
| z'. Imm. skeleton.             | Channel Islands.                                              | Dr. A. Günther [P.].                    |



Subsp. a. *Phalacrocorax desmaresti*.

- Phalacrocorax desmarestii*, *Payraudeau, Ann. Sci. Nat.* (i.) viii. p. 464 (1826) [Sardinia, etc.; tail said to be composed of 14 feathers; *Gould, B. Eur.* v. pl. 411 (1837) [Black Sea]; *Keys. u. Blasius, Wirbelth.* p. 233 (1840); *Degl. Orn. Europ.* ii. p. 380 (1840); *Brehm, Vogelfang*, p. 360 (1855); *Bolle, J. f. O.* 1865, p. 415 [Sardinia]; *Früsch, Vog. Europa*, p. 452 (1870); *Brooke, Ibis*, 1873, p. 345 [Sardinia].
- Carbo cristatus*, *Cara (nec Gmel.)*, *Orn. Sard.* p. 199 (1842).
- Carbo leucogaster*, *Cara (nec Vieill.)*, *Orn. Sard.* p. 199 (1842).
- Phalacrocorax albus*, *G. R. Gray, List of B.* pt. iii. p. 184 (1844) [albino].
- Phalacrocorax graculus*, *Mühle (nec Linn.)*, *Beitr. Orn. Griechentl.* p. 131 (1844); *Linderm. Vog. Griechentl.* p. 167 (1860); *Bolle, J. f. O.* 1865, p. 420; *Ehres & Buckl. Ibis*, 1870, p. 336 [Epirus]; *Saunders, Ibis*, 1871, p. 308 [S. Spain]; *Taylor, Ibis*, 1872, p. 234 [Crimea]; *Irby, Orn. Gibraltar*, p. 207 (1875); *Blanf. E. Persia*, u p. 298 (1876) [Caspian]; *Whitehead, Ibis*, 1885, p. 48 [Corsica]; *Gigl. Avif. Ital.* p. 272 (1886); *Salvad. Ucc. Ital* p. 271 (1886); *Gigl. Avif. Ital.* pt. i. p. 682, pt. ii. p. 658 (1889-90); *Lilford, Ibis*, 1889, p. 347 [Cyprus]; *Irby, Orn. Gibraltar*, 2nd ed. p. 198 (1895).
- Graculus desmarestii*, *Reichenb. Natatores*, pl. xxxv.<sup>a</sup> figs. 2644 & pl. cvi.<sup>a</sup> figs. 2942-4 (1850).
- Haliæus desmarestii*, *Gloger, J. f. O.* 1857, pp. 5-14 [Mediterranean].
- Haliæus leucogaster*, *Gloger, J. f. O.* 1857, pp. 14-23 [Mediterranean].
- Carbo desmarestii*, *Hornoy, J. f. O.* 1858, p. 237, 1859, p. 132.
- Phalacrocorax cristatus*, *Linderm. Vog. Griechentl.* p. 167 (1860); *Wharton, Ibis*, 1876, p. 29 [Corsica].
- Carbo graculus*, var. *desmaresti*, *Tschusi u. Dalla Torre, Orn.* iii. p. 350 (1887), iv. p. 361 (1888), vi. p. 266 (1890) [Austro-Hungary].
- Phalacrocorax graculus croaticus*, *Brusina, Orn. Jahrb.* ii. p. 22 (1891) [Croatia]; *id. Motr. Ptic. Soiz.* [Birds of Croatia], p. 72 (1891?).
- Phalacrocorax graculus*, var. *desmaresti*, *Reiser, Orn. Balcanica*, iv. p. 144 (1896).

The Mediterranean form of *P. graculus* appears to differ constantly in the following points.—The bill is longer and more slender than in the adult of *P. graculus*, and the young have the underparts *white*. I have only examined a very limited number of specimens; but am of opinion that this Mediterranean form should be regarded as subspecifically distinct.

*Hab.* Coasts and islands of the Mediterranean; Black and Caspian Seas.

|                         |               |                                                   |
|-------------------------|---------------|---------------------------------------------------|
| a. Ad. sk. (albino).    | No locality.  | Old Coll. (Type of <i>P. albus</i> , G. R. Gray.) |
| b. Ad. sk.              | No locality.  | Massena Coll.                                     |
| c. Imm. sk.             | Tangier.      | Purchased.                                        |
| d f. Ad, imm, et juv sk | Croatia, Aug. | Prof. Brusina [P.].                               |

13. *Phalacrocorax chalconotus*.

† *Carbo ater*, Lesson, *Traité d'Orn.* p. 604 (1831) [Seal Bay, Australia, ? New Zealand]; Pucheran, *Rev. et Mag. Zool* 1850, p. 627.

· Cormoran glauque, Hombr. & Jacquinot, *Voy. Pôle Sud, Atl. Ois.* pl. 31. fig. 1 (1845).

*Graculus chalconotus*, G. R. Gray, *Voy. Erebus & Terror, Birds*, p. 20, pl. xxi.<sup>a</sup> (1845); Reichenb. *Syn. Av.* pl. xxxv.<sup>b</sup> fig. 2316 (1850); G. R. Gray, *Ibis*, 1862, p. 252 [Otago].

*Graculus glaucus*, Reichenb. *Syn. Av.* pl. xlix.<sup>c</sup> fig. 2553 [bad] (1850): Bonap. *Consp. Av.* p. 171 (1855); G. R. Gray, *Hand-l. B.* iii p. 127 (1871).

*Phalacrocorax glaucus*, Jacq. & Pucher. *Voy. Pôle Sud, Zool.* iii. p. 127 (1853); Buller, *Man. B. N. Zeal.* p. 96 (1882); *id.* *B. N. Zeal.* 2nd ed. ii. p. 163 (1888).

*Phalacrocorax chalconotus*, Buller, *B. N. Zeal.* p. 334 (1873); *id.* *Man. B. N. Zeal.* p. 94 (1882); *id.* *B. N. Zeal.* 2nd ed. ii. p. 162 (1888).

*Adult in breeding-plumage.* Very similar to the adult of *P. graculus*, but the bill is somewhat stouter and more hooked at the extremity; the feathers of the upper back and scapulars bronze-green, edged with *pale shining brass-green*, and the head, neck, lower back, rump, and upper tail-coverts glossed with darker and more bluish green. Crest nearly 2 inches long. Tail composed of 12 feathers; the basal portion of the shafts *white*. "Bare space encircling the eye orange; bill greyish brown; legs and feet dull orange-yellow" (Buller). Total length about 28 inches, culmen 2.3, wing 11.2, tail 5.6, tarsus 2.5.

*Immature probably in the second autumn plumage.* Head, neck, and underparts dull sooty-brown, with a dull oil-green gloss; upper back glossed with dull oil-green, most of the feathers with indistinct darker margins, being in this respect unlike those of the adult; wings and scapulars brownish with a slight gloss; lower back, rump, and upper tail-coverts glossed with dark bluish green as in the adult.

*Hab.* New Zealand coasts.

|                       |                                         |                                                 |
|-----------------------|-----------------------------------------|-------------------------------------------------|
| a. Ad. sk.            | Otago, New Zealand.                     | Percy Earl, Esq. [P.]<br>(Type of the species.) |
| b. Imm. sk.           | New Zealand.                            | Capt. Stokes, R.N.<br>[P.]                      |
| c, d. ♂ ♀ vix ad. sk. | The Bluff, Southland, New Zealand, Feb. | Baron A. von Hügel<br>[P.]                      |

† Lesson's original description cannot be identified:—

"Cormoran noir; *Carbo ater*. Noir en entier; taille d'un canard. De la baie des Chiens marins, à la Nouvelle Hollande."

Pucheran states that he has examined Lesson's type, and finds it to belong to the present species, but I do not think that his name should supersede *P. chalconotus*.

14. *Phalacrocorax auritus*.

- Hydrocorax dilophus*, Vieill. (nec Vieill. *N. Diet. d'Hist. Nat.* viii. p. 85) (1817, = *P. punctatus*), *id. Gal. Ois.* ii. pl. 275 (1825) [nec descript.].
- Carbo auritus*, Lesson, *Traité d'Orn.* p. 805 (1831) [founded on Vieillot's fig., New Zealand!].
- Pelecanus* (*Carbo*) *dilophus*, Swains. & Richards. *Faun. Bor.-Amer.* p. 473 (1831) [Saskatchewan].
- Phalacrocorax dilophus*, Nutt. (nec Vieill. 1817) *Man. Orn.* p. 483 (1834), *Aud. Orn. Biogr.* iii. p. 420, pl. 257 (1835), v. p. 629, fig. (1839); *id. B. Amer.* vii. p. 134, pl. 410 (1839); *G. R. Gray, List of B.* pt. iii. p. 185 (1844) [part, specs. *a* & *b*], *Putnam, P. Ess. Inst.* i. p. 221 (1856) [Essex County]; *Bryant, P. Bost. Soc.* viii. p. 71 (1861) [Gulf of St. Lawrence, breeding]; *Turnb. B. E. Pennsylv.* p. 48 (1869); *Stearns & Coues, N. Engl. B.-Life*, pt. ii. p. 340, fig. 74 (1883); *Coues & Prentiss, Bull. U.S. Nat. Mus.* no. 26, p. 108, fig. 98 (1883); *Stearns, P. U.S. Nat. Mus.* vi. p. 121 (1883) [Labrador]; *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 149, fig. (1884); *Coues, Key N. Am. B.* 2nd ed. p. 727, fig. 506 (1884); *Seton, Auk*, iii. p. 148 (1886) [W. Manitoba]; *Ridgw. Man. N. A. B.* p. 78 (1887); *Mearns, Auk*, vii. p. 55 (1890) [Hudson R.]; *Thomps. P. U.S. Nat. Mus.* xiii. p. 472 (1890) [Manitoba]; *Warren, B. Pennsylv.* p. 28 (1890); *Hatch, B. Minnesota*, p. 27 (1892); *Mackay, Auk*, xi. p. 18 (1894) [habits, Rhode I.]; *Savage, Auk*, xii. p. 313 (1895) [New York]; *A. O. U. Check-L.* 2nd ed. p. 42 (1895); *Coues, Auk*, xiii. p. 78 (1896) [head-waters, Columbia R.].
- Phalacrocorax floridanus*, *Aud. Orn. Biogr.* iii. p. 387, pl. 252 (1835), & v. p. 632 (1839); *id. B. Amer.* vii. p. 141, pl. 417 (1839); *Lembeye, Av. Cuba*, p. 119, pl. 18 (1850); *Salvin, Ibis*, 1864, p. 374 [Brit. Honduras], 1866, p. 200 [Guatemala], 1889, p. 376 [Cozumel I.].
- Phalacrocorax brasiliensis*, Bonap. (nec Gmel.) *Comp. List*, p. 60 (1838).
- Carbo dilophus*, Gamb. *J. Acad. N. Sci. Philad.* (2) i. p. 227 (1849).
- Graculus dilophus*, Reichenb. *Natatores*, pl. xxxiv. figs. 861-2 & pl. xxxv. fig. 2753 [bad] (1850); *Bonap. Consp. Av.* p. 172 (1855); *Baird, B. N. Amer.* p. 877 (1860) [part, Atlantic coast]; *Coues, P. Ac. Philad.* 1861, p. 241 [Labrador]; *Boardm. P. Bost. Soc.* ix. p. 130 (1862) [Maine]; *Verr. P. Ess. Inst.* iii. p. 159 (1862); *Blakiston, Ibis*, 1863, p. 151 [Saskatchewan]; *Allen, P. Ess. Inst.* iv. p. 89 (1864) [Massachusetts]; *Laur. Ann. Lyc. N. Y.* viii. p. 208 (1866); *Coues, P. Ess. Inst.* v. p. 302 (1868) [New England]; *id. P. Bost. Soc.* xii. p. 126 (1868) [S. Carolina]; *id. P. Ac. Philad.* 1871, p. 38 [N. Carolina]; *id. Key N. Am. B.* p. 303, fig. 198 (1872); *Ridgw. Ann. Lyc. N. Y.* x. p. 390 (1874) [Illinois]; *Coues, B. N. W.* p. 587 (1874) [part]; *Snow, B. of Kansas*, p. 13 (1875); *Scott, Bull. Nutt. Orn. C.* iv. p. 226 (1879) [New Jersey]; *Roberts & Benn. Bull. Nutt. Orn. C.* v. p. 18 (1880) [Minnesota]; *Maynard, B. E. N. Amer.* p. 469 (1881); *Samuels, N. & E. Birds*, p. 535 (1883); *Reid, Bull. U.S. Nat. Mus.* no. 25, p. 263 (1884) [Bermuda].
- Graculus floridanus*, Reichenb. *Natatores*, pl. xxxv. fig. 2751 (1850); *Bonap. Consp. Av.* p. 172 (1855); *Baird, B. N. Amer.* p. 879 (1860); *Albrecht, J. f. O.* 1861, p. 57; *Allen, Bull. Mus. C. Zool.* ii. p. 365 (1871); *Coues, P. Ac. Philad.* 1871, p. 38; *Gundl. J. f. O.* 1875, p. 400 [Cuba].

*Carbo bilophus*, *Cur., Hartl. J. f. O.* 1855, p. 419.

*Graculus bilophus*, *G. R. Gray, Hand-l. B.* iii. p. 128 (1871).

*Graculus dilophus*, var. *floridanus*, *Coues, Key N. Am. B.* p. 303 (1872); *Ridgw. Ann. Lyc. N. Y.* x. p. 390 (1874) [Illinois]; *Cory, B. Buhamas Is.* p. 198 (1880).

*Phalacrocorax* sp., *Salvin, P. Z. S.* 1883, p. 427 [Guadeloupe].

*Phalacrocorax dilophus floridanus*, *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 150, fig. (1884); *Coues, Key N. Am. B.* 2nd ed. p. 727 (1884); *Ridgw. Man. N. A. B.* p. 78 (1887); *Scott, Auk*, iv. p. 136 (1887) [Tarpon Springs, Florida]; *Lloyd, Auk*, iv. p. 184 (1887) [W. Texas]; *Cory, Auk*, v. p. 70 (1888) [Bahamas, Cuba]; *Scott, Auk*, v. p. 377 (1888); *Cory, B. W. Ind.* p. 271 (1889); *Scott, Auk*, vii. p. 307 (1890); *Northrop, Auk*, viii. p. 79 (1891) [Andros I.]; *Brewst. & Chapm. Auk*, viii. p. 137 (1891) [Suwanee R.]; *Cory, Auk*, ix. p. 49 (1892) [Watling's I.]; *Scott, Auk*, ix. p. 211 (1892) [Caloosahatchie Region, Fla.]; *Cory, Cat. B. W. Ind.* p. 85 (1892); *A. O. U. Check-l.* 2nd ed. p. 42 (1895); *Wayne, Auk*, xii. p. 364 (1895) [Ancilla R., Fla.].

*Adult in breeding-plumage.* Head, neck, lower back, rump, upper tail-coverts, and entire underparts black with a dull oil-greenish or bluish gloss; feathers of the upper back, scapulars, and wing-coverts brownish grey, of a slightly pointed oval shape, and widely margined with black glossed with dull bluish; quills brownish black; tail-feathers black; a tuft of narrow lengthened feathers on each side of the crown, commencing above and behind the eye\*. Tail composed of 12 feathers. Upper mandible black, mottled with greyish or dull yellow along the sides; lower mandible yellowish or

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\* The colour of these feathers appears to be subject to individual variation; in some examples the crests are wholly black, while in others they are mixed with white feathers.

American ornithologists recognize four distinct subspecies of *P. auritus* (*dilophus*): two Eastern forms, with the nuptial crests chiefly or entirely black, and two Western, in which these ornaments are chiefly or entirely white.

The range of typical *P. dilophus* is said by Dr. Ridgway to be "North-eastern North America, south, in winter, to Gulf Coast, breeding from Northern United States northward."

"*P. dilophus floridanus*" occurs in "South Atlantic and Gulf States, and Lower Mississippi Valley, north to Southern Illinois."

The only distinction between these two forms is said to be a slight difference in size, so slight, that it seems in our opinion unworthy of consideration [see *Ridgway, Man. N. Amer. B.* 2nd ed. p. 78 (1896)].

Of the two Western forms we find the following summary:—

"*P. dilophus cincinatus*." "*Hab.* North-west coast of North America from Alaska, south (in winter) to California."

"*P. dilophus albociliatus*." "*Hab.* Coast of California, south to Western Mexico (Socorro Island)."

Of these Western forms, in which the nuptial crests, as already stated, are chiefly or entirely white, northern birds average, as might be expected, somewhat larger than individuals from the southern parts of the range, but this is the only difference.

It may be advisable to separate the Eastern and Western forms on account of the difference of colour in the nuptial crest; but to divide the Northern and Southern birds by a slight difference in size is quite unnecessary, for no line can be drawn between the two.

pale bluish, mottled with dusky; loreal region and gular sac deep orange; eyelids and whole interior of the mouth bright cobalt-blue, the former sometimes dotted with white; iris bright grass-green; legs and feet deep black.

*Adult in non-breeding plumage.* Similar to the above, but the tufts of lengthened feathers behind the eyes are absent. Soft parts similar to the above, but the bare skin of the lores, gular pouch, &c. is deep yellow instead of orange, and the blue of the mouth and eyelids absent (*Baird, Brewer, & Ridgway*).

*Adult.* Total length about 31 inches, culmen 2·3, wing 11·6-13, tail 5·8-6·2, tarsus 2·25. The adult female appears to measure somewhat less than the male.

*The immature bird* is very similar to the young of *P. vigua* of the same age, but may be distinguished by the more rounded and less lanceolate feathers of the back and scapulars.

*Hab.* Atlantic coast of North America from Labrador to Florida; eastwards through the West Indies to Guadeloupe, westwards to the Gulf of Mexico, and extending far inland to West Texas, the head-waters of the R. Columbia and R. Saskatchewan.

|               | Culm. | Wing. | Tail.         |                                                              |                                    |
|---------------|-------|-------|---------------|--------------------------------------------------------------|------------------------------------|
| a. Ad. sk.    | 2·15  | 12·0  | 6·2           | North America.                                               | Old Collection.                    |
| b. Ad. sk.    | 2·3   | 11·4  | 5·4 in moult. | North America.                                               | Old Collection.                    |
| c. Imm. sk.   | 2·3   | 12·3  | 6·1           | 49th Parallel.                                               | North American Boundary Comm. [P.] |
| d. Imm. sk.   | 2·0   | 11·7  | 5·9 worn.     | 49th Parallel.                                               | North American Boundary Comm. [P.] |
| e. Imm. sk.   | 2·3   | 13·0  | 6·8           | Chicago, Illinois ( <i>E. W. Nelson</i> ).                   | Salvin-Godman Coll.                |
| f. Ad. sk.    | 2·15  | 11·6  | 5·3           | Florida ( <i>H. W. Henshaw</i> ).                            | Salvin-Godman Coll.                |
| g. ♂ ad. sk.  | 2·15  | 12·0  | 5·8           | Tarpon Springs, Florida, April 15 ( <i>W. E. D. Scott</i> ). | Salvin-Godman Coll.                |
| h. ♂ ad. sk.  | 2·15  | 11·6  | 5·8           | Tarpon Springs, Florida, April 24 ( <i>W. E. D. Scott</i> ). | Salvin-Godman Coll.                |
| i. ♀ imm. sk. | 2·1   | 12·3  | 5·6           | Corpus Christi, Texas, Nov. 5 ( <i>F. B. Armstrong</i> ).    | Salvin-Godman Coll.                |
| k. ♂ ad. sk.  | 2·15  | 11·7  | 5·9           | Turneff Lagoon, Brit. Honduras, May 8 ( <i>O. S.</i> ).      | Salvin-Godman Coll.                |
| l. ♀ imm. sk. | 2·0   | 10·9  | 5·4           | Turneff Lagoon, Brit. Honduras, May 8 ( <i>O. S.</i> ).      | Salvin-Godman Coll.                |
| m. Ad. sk.    | 2·3   | 12·4  | 5·9           | Cozumel I., Yucatan ( <i>G. F. Gaumer</i> ).                 | Salvin-Godman Coll.                |
| n. Ad. sk.    | 2·3   | 12·3  | 5·9           | Cozumel I., Yucatan ( <i>G. F. G.</i> ).                     | Salvin-Godman Coll.                |

|                      | Culm. | Wing. | Tail.     |                                                                  |                        |
|----------------------|-------|-------|-----------|------------------------------------------------------------------|------------------------|
| <i>o.</i> Ad. sk.    | 2.15  | 11.6  | 5.6       | Cozumel I., Yucatan<br>( <i>G. F. G.</i> ).                      | Salvin-Godman<br>Coll. |
| <i>p.</i> Ad. sk.    | 2.1   | 11.6  | 5.6       | Cózumel I., Yucatan<br>( <i>G. F. G.</i> ).                      | Salvin-Godman<br>Coll. |
| <i>q.</i> ♀ imm. sk. | 2.35  | 11.6  | 6.0       | Bemba, Cuba, July<br>( <i>G. F. G.</i> ).                        | Salvin-Godman<br>Coll. |
| <i>r.</i> Juv. sk.   | 1.85  | 10.5  | In moult. | Bemba, Cuba, July<br>( <i>G. F. G.</i> ).                        | Salvin-Godman<br>Coll. |
| <i>s.</i> Imm. sk.   | 2.2   | 12.0  | 5.5 worn. | Guadeloupe Island<br>( <i>Admiral A. H.</i><br><i>Markham</i> ). | Salvin-Godman<br>Coll. |

Subsp. *a.* **Phalacrocorax cincinatus.**

*Carbo cincinatus*, *Brandt, Bull. Ac. St. Pétersb.* iii. p. 55 (1837)  
[Kadiak I., Alaska].

*Phalacrocorax dilophus*, *G. R. Gray (nec Sw. & R.), List of B.* pt. iii.  
p. 185 (1844) [part, spec. *c*]; *Baird in Stansbury's Rep.* p. 324  
(1852) [Gt. Salt Lake].

*Phalacrocorax cincinnatus*, *Bonap. Consp. Av.* p. 168 (1855).

*Graculus dilophus*, *Baird, P. Ac. Philad.* 1859, p. 301 [Lower  
California]; *Coues, P. Ac. Philad.* 1866, p. 100 [California];  
*Brown, Ibis*, 1868, p. 426 [Vancouver]; *Dall & Bann. Tr. Chicago*  
*Acad.* i. p. 302 (1869) [Sitka]; *Allen, Bull. M. C. Zool.* iii. p. 183  
(1872) [Gt. Salt Lake].

*Graculus cincinnatus*, *Baird, B. N. Amer.* p. 877 (1860) [Sitka];  
*Schleg. Mus. Pays-Bas*, vi. *Pelec.* p. 22 (1863); *Elliot, B. N. Amer.*  
ii. pl. li. (1869); *Coues, Key N. Am. B.* p. 302 (1872); *Finsch,*  
*Abh. Ver. Brem.* iii. p. 86 (1873).

*Graculus concinnatus*, *G. R. Gray, Hand-l. B.* iii. p. 127 (1871).

*Phalacrocorax dilophus cincinnatus*, *Baird, Brew. & Ridgw. Water-B.*  
*N. Amer.* ii. p. 150, fig. (1884); *Coues, Key N. Am. B.* 2nd ed.  
p. 727 (1884); *Turner, Auk*, ii. p. 158 (1885) [Nearer Is., Alaska];  
*Everm. Auk*, iii. p. 89 (1886) [Ventura Co., Cal.]; *Nelson, Rep.*  
*N. H. Alaska*, no. iii. p. 65 (1887).

*Phalacrocorax dilophus albociliatus*, *Ridgw., Baird, Brew. & Ridgw.*  
*Water-B. N. Am.* ii. p. 150 (1884); *Coues, Key N. Am. B.* 2nd ed.  
p. 728 (1884); *Ridgw. P. Biol. Soc. Wash.* ii. p. 94 (1885) [Cali-  
fornia to Cape St. Lucas]; *Bryant, Pr. Cal. Ac.* (2) ii. p. 253  
(1890) [habits]; *A. O. U. Check-l.* 2nd ed. p. 43 (1895); *Ridgw.*  
*Man. N. A. B.* 2nd ed. p. 78 (1897).

*Phalacrocorax dilophus cincinatus*, *Ridgw. Man. N. A. B.* p. 78  
(1887); *A. O. U. Check-l.* 2nd ed. p. 43 (1895).

*Phalacrocorax pelagicus albociliatus*, *Cooper, Auk*, iv. p. 93 (1887)  
[Ventura Co., Cal.].

*Adult in breeding-plumage.* Differs from typical *P. auritus* in  
having the tufts behind the eyes composed of longer feathers,  
which are white, with generally a few black feathers among them.  
The soft parts appear to be practically similar to those of the  
typical *P. auritus*. Total length about 32 inches, culmen 2.05–  
2.35, wing 12.3–13.5, tail 5.8, tarsus 2.45.

*Hab.* Pacific Coast of North America from the Aleutian Islands  
and Alaska southwards to Lower California and West Mexico  
(Socorro I.); eastwards to Great Salt Lake.

|                | Culm. | Wing. | Tail.          |                                                                           |                             |
|----------------|-------|-------|----------------|---------------------------------------------------------------------------|-----------------------------|
| a. [♂] ad. sk. | 2·2   | 12·7  | 5·4 very worn. | Aleutian Islands.                                                         | Purchased.                  |
| b. [♀] ad. sk. | 2·35  | 13·5  | 5·8 very worn. | Aleutian Islands.                                                         | Purchased.                  |
| c. ♂ ad. sk.   | 2·35  | 13·0  | 5·8 worn.      | Quatsino Sound, W. coast of Vancouver I., Sept. ( <i>Dr. Lyall</i> ).     | Voyage of H.M.S. 'Plumper.' |
| d. ♀ ad. sk.   | 2·05  | 12·3  | 5·8 worn.      | Pyramid Lake, Nevada, May 26 ( <i>H. G. Parker &amp; H. W. Henshaw</i> ). | Salvin-Godman Coll.         |
| e. Juv. sk.    | 2·05  | 11·5  | In moult.      | San Francisco, California.                                                | G. Barclay, Esq. [P.]       |
| f. ♂ imm. sk.  | 2·3   | 12·3  | 5·5 in moult.  | San Diego Bay, California, Sept. 13 ( <i>A. W. Anthony</i> ).             | Salvin-Godman Coll.         |

15. *Phalacrocorax neglectus*.

*Graculus neglectus*, *Wahlberg, J. f. O.* 1857, p. 4 [Possession, Halifax, and Ichaboe Is., S.W. Africa]; *Gurney, ed. Anderss. B. Damaral.* p. 369 (1872).

*Phalacrocorax neglectus*, *Sharpe's ed. Layard, B. S. Afr.* p. 779 (1884); *Fairbridge, Ibis*, 1893, p. 278 [Dassen I.]; *W. Selater, Ibis*, 1896, pp. 521, 522 [Dassen I.].

*Adult male in breeding-plumage.* Head, neck, upper and lower back, and rump dark sooty-brown, with a slight greenish-bronze gloss; breast and rest of underparts black, with a dull oil-green gloss; middle of back, wing-coverts, and scapulars bronze-brown, very narrowly margined with black and with rounded extremities; quills and tail-feathers dark brown. The throat is more feathered than in the allied species, the feathering on the lower mandible extending forwards for 0·7 inch beyond the gape, while that on the inter-ranal space extends to below a vertical line drawn from the nostril. Among the feathers of the forehead and neck are numerous inconspicuous small white plumules, supported by naked shafts. Tail composed of 12 feathers. Total length 28 inches, culmen from feathers on forehead 2·3, wing 11, tail (much worn) 4·5, tarsus 2·4, outer toe and claw 3·75. (*Mus. Cantabr.*)

A second smaller specimen in the British Museum measures:—Total length 27·5 inches, culmen from feathers on forehead 2·3, wing 9·8, tail (worn) 4·2, tarsus 2·25, outer toe and claw 3·7.

"Iris brown above, greenish on the lower portion; skin of eyelid and the base of the lower mandible, as well as the legs, feet, and claws, inky-black; bill black, lighter towards the tip" (*W. G. Fairbridge*).

*Hab.* South Africa.

a. Ad sk. Simon's Bay, S. Africa, Oct. 2. Earl of Crawford [P.]



16. *Phalacrocorax fuscicollis*.

Brown-necked Shag, *Lath. Gen. Hist. B.* x. p. 425 (1824) [Bengal].  
*Phalacrocorax fuscicollis*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 91 (1826); *Hume & Davison, Str. F.* vi. p. 496 (1878) [Tenasserim]; *Davidson & Wenden, Str. F.* vii. p. 93 (1878) [Deccan]; *Butler, Str. F.* vii. pp. 178, 190 (1878) [Sind]; *Ball, Str. F.* vii. p. 234 (1878) [Ganges to Godavari]; *Butl. Cat. B. Sind.* p. 82 (1879); *Doig, Str. F.* viii. p. 372 (1879) [E. Narra: breeding]; *Legge, B. Ceylon*, iii. p. 1182 (1880); *Butler, Str. F.* ix. p. 442 (1880); *Oates, Str. F.* x. p. 248 (1882) [Pegu]; *Davidson, Str. F.* x. p. 327 (1882) [Khandeish]; *Oates, B. Burmah*, ii. p. 233 (1883); *Sicinh. & Barnes, Ibis*, 1885, p. 138 [Central India]; *Hume, Str. F.* xi. p. 352 (1888) [Manipur]; *Oates ed. Hume's Nests & Eggs*, iii. p. 272 (1890).

*Carbo fuscicollis*, *Frankl. P. Z. S.* 1831, p. 125.

*Phalacrocorax leucotis*, *Blyth, Cat. Mus. As. Soc.* p. 298 (1849).

*Graculus sinensis*, *Blyth (nec Shaw & Nodd.), Cat. Mus. As. Soc.* p. 298 (1849); *Layard, Ann. Mag. N. H.* xiv. p. 271 (1854) [Ceylon]; *Adams, P. Z. S.* 1858, p. 509 [Punjab, Cashmere], 1859, p. 189; *Jerd. B. Ind.* ii. pt. ii. p. 862 (1864); *Holdsw. P. Z. S.* 1872, p. 483 [Ceylon]; *Hume, Nests & Eggs Ind. B.* p. 660 (1873); *Ball, Str. F.* ii. p. 440 (1874) [Chota Nagpur]; *Legge, Ibis*, 1875, p. 409 [S. Ceylon, scarce]; *Butler, Str. F.* iv. p. 33 (1876) [Mt. Aboo].

*Urile egretta*, *Bonap. Consp. Av.* p. 176 (1855); *id. C. R.* xliii. p. 577 (1856) [breeding-plumage].

*Graculus fuscicollis*, *Blyth, Ibis*, 1867, p. 181 [part]; *Bulger, Ibis*, 1869, p. 170 [Sikhim]; *Blyth, Cat. Mamm. B. Burma*, p. 164 (1875); *Hume, Str. F.* iv. p. 224 (1876) [Tenasserim]; *Oates, Str. F.* v. p. 170 (1877) [Pegu: breeding].

*Carbo sinensis*, *Oates, Str. F.* iii. p. 350 (1875) [Pegu].

*Adult in breeding-plumage.* Head, neck, lower back, rump, upper tail-coverts, and underparts black glossed with deep steel-blue; upper back, wing-coverts, and scapulars bronze, with greenish reflections, each feather with rather a wide black border; a number of tiny white plumules on each side of the head above the eye and scattered here and there on the neck, and a tuft of hairy white feathers on each side of the neck behind the ear. Tail composed of 12 feathers. Iris greenish blue; bare skin round the eye dark brown with yellow specks, bare skin on the throat and by the sides of the bill yellow; legs and feet black. Total length about 25 inches, culmen 2.4, wing 10.6, tail 6.6, tarsus 1.7-1.8, outer toe and claw 3.

*Adult in non-breeding plumage.* Differs in having no white tuft behind the ears: the chin and feathers surrounding the gular pouch white; remainder of plumage worn and browner; the upper back, scapulars, and wing-coverts being of a dull brownish grey.

*The younger stages* of this species appear to be very similar to those gone through by *P. graculus*. In the youngest examples the chin, throat, breast, and rest of underparts are mostly white; the top of the head, neck, and upper parts brownish; the upper back,

wing-coverts, and scapulars margined with darker brown, and the lower back and rump black glossed with steel-blue. *Older examples* have the whole of the underparts dark brown, only the more or less concealed bases of the feathers being white, and the upper parts are like those of the adult. *At the third moult* the adult breast-feathers are attained.

*Hab.* India, Ceylon, and the Indo-Burmese countries as far south as Tenasserim.

|                           |                                                   |                         |
|---------------------------|---------------------------------------------------|-------------------------|
| a. d. ♂ ad. et ♀ imm. sk. | Eastern Narra, Sind, Feb., March, June (S. Doig). | Hume Coll.              |
| c. ♀ ad. sk.              | Hydrabad, Sind, June 12 (E. A. Butler).           | Hume Coll.              |
| f. Ad. sk.                | Shadada, Khandeish, Nov. 17 (J. Davidson).        | Hume Coll.              |
| g-i. ♂ ♀ ad. sk.          | Delhi, Aug. & Sept. (C. T. Bingham).              | Hume Coll.              |
| k. Ad. sk.                | Jhansi.                                           | Hume Coll.              |
| l. m. ♂ ad. et ♀ imm. sk. | Logtak Lake, Manipur, Mar. (A. O. H.).            | Hume Coll.              |
| n. ♀ ad. sk.              | Tounghoo, May (R. G. Wardlaw Ramsay).             | Tweeddale Coll.         |
| o q. Ad. sk.              | Lower Pegu, Sept.                                 | E. W. Oates, Esq. [C.]. |
| r. Imm. sk.               | 40 miles N. of Rangoon, April 12.                 | Hume Coll.              |
| s. Imm. sk.               | Near Rangoon.                                     | Hume Coll.              |
| t. ♂ vix ad. sk.          | Kyaikto, Lower Burma, Feb. 8 (W. Davison).        | Hume Coll.              |
| u. ♀ imm. sk.             | Thatone, Sept. 16 (W. D.).                        | Hume Coll.              |

### 17. *Phalacrocorax sulcirostris*.

- Carbo sulcirostris*, Brandt, *Bull. Acad. St. Pétersb.* iii. p. 56 (1837); Cassin, *U. S. Expl. Exped.*, Orn. p. 374 (1858) [Manua Bay, New Zealand]; Finsch, *Neu-Guin.* p. 183 (1865) [Java].  
*Phalacrocorax* sp., G. R. Gray, *List of B.* pt. iii. p. 185 (1844) [Murray Scrubs].  
*Phalacrocorax sulcirostris*, G. R. Gray, *List of B.* pt. iii. p. 185 (1844); Gould, *B. Austr.* vii. pl. 67 (1848); *Diggl. Orn. Austr.* p. 124, pl. (1870); *id. B. Austr.* p. 120, pl. (1877); *Salvad Ann. Mus. Civ. Genov.* xiv. p. 609 (1879) [Kei], *North, Rec. Austr. Mus.* ii. p. 38 (1892) [Norfolk I.]; *Hartert, Nov. Zool.* iii. p. 598 (1896) [Lombok].  
*Carbo purpuragula*, Peale, *Zool. Expl. Exped., Birds*, p. 269 (1848).  
*Graculus sulcirostris*, Reichenb. *Natatores*, pl. xxxv. figs. 2547-8 (1850); G. R. Gray, *P. Z. S.* 1860, p. 366 [Batjan, Amboina]; *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 13 (1863); G. R. Gray, *Hand-l. B.* iii. p. 129 (1871); Finsch, *J. f. O.* 1872, p. 258; *r. Pelz. Ibis*, 1873, p. 124; Finsch, *J. f. O.* 1874, pp. 174, 214 [North I., N. Zealand]; Lenz, *J. f. O.* 1877, p. 381 [Ceram]; *Rosenb. Malay. Arch.* p. 324 [Ceram], p. 373 [Aru], p. 564 [New Guinea] (1878-9).  
*Halæus sulcirostris*, Bonap. *Consp. Av.* ii. p. 178 (1855); *Rosenb. Nat. Tijdschr. Ned. Ind.* xxv. p. 255 (1863).

- Microcarbo stictocephalus*, Bonap. *Consp. Av.* ii. p. 178 (1855).  
*Graculus stictocephalus*, G. R. Gray, *Ibis*, 1862, p. 252; *id.* *Hand-l.* B. iii. p. 129 (1871); Ramsay, *P. Linn. Soc. N. S. W.* ii. p. 203 (1877); *id.* *Tab. List Austr. B.* p. 25 (1888); *North, Nests & Eggs Austr. B.* p. 367 (1889).  
*Phalacrocorax stictocephalus*, Gould, *Handb. B. Austr.* ii. p. 495 (1865); Ramsay, *Ibis*, 1866, p. 335 [Port Denison]; *id.* *P. Z. S.* 1877, p. 348 [N.E. Queensland]; Layard, *Ibis*, 1888, p. 492 [New Caledonia].  
*Graculus fuscicollis*, Blyth, *Ibis*, 1867, p. 181 [part].  
*Carbo squamatus*, Mus. Vindob. MS., *fide v. Pelz. Ibis*, 1873, p. 124.  
*Microcarbo sulcirostris*, Salvad. Ucc. Born. p. 365 (1874); *id.* *Ann. Mus. Civ. Genov.* x. p. 166 (1877) [Sorong]; *id.* *Orn. Pap.* iii. p. 408 (1882); *id.* *Ann. Mus. Civ. Genov.* xviii. p. 403 (1883) [Halmahera, Ceram, Aru]; Everett, *J. Str. B. As. Soc. Beng.* no. xx. p. 188 (1889) [S. Borneo].  
*Phalacrocorax purpuragula*, Sharpe, *Voy. Erebus & Terror, Birds App.* p. 34 (1875).

*Adult in breeding-plumage.* Head, neck, lower back, rump, upper tail-coverts, and underparts brownish black, with a dull oil-green gloss; upper back, wing-coverts, and scapulars ash, each feather with a moderately wide black border; a number of white plumules on each side of the head above the eye and scattered here and there on the neck; a small tuft of rather long, narrow white feathers behind the ear. Tail composed of 12 feathers. Iris deep green; bill lead-colour, with the culmen black, and the under mandible finely and irregularly lined with a darker shade of lead-colour; skin surrounding the eye and gular pouch brownish black, the latter strongly tinged with blue; legs and feet black. Total length about 25 inches, culmen 1.6–1.8, wing 9.5–10.4, tail 4.7–5.5, tarsus 1.7–1.8, outer toe and claw 2.9–3.

*Adult in non-breeding plumage.* Similar to the above, but the white plumules on the head and neck are absent.

*Immature* birds, apparently in the second year's plumage, differ from the adult in having the head, neck, and underparts brownish black, and the upper back, scapulars, and wing-coverts deep brownish grey, less distinctly margined with brownish black.

*Hab.* Coasts of Australia, ranging east to New Zealand, Norfolk Island, and New Caledonia, north to New Guinea, the Moluccas, Java, and South Borneo.

|                       |                                                                 |                          |
|-----------------------|-----------------------------------------------------------------|--------------------------|
| a. ♀ imm. sk.         | Batjan Island (A. R. W.).                                       | Wallace Coll.            |
| b. Ad. sk.            | Australia.                                                      | Old Coll.                |
| c, d. Ad. sk.         | Australia.                                                      | Capt. Sturt [P.].        |
| e. Vix ad. sk.        | North-west Australia.                                           | Earl of Derby [P.].      |
| f, g. ♀ imm. sk.      | Fitzroy River, N.W. Australia, Aug., Oct. (T. H. Bowyer Bower). | Capt. Bowyer Bower [P.]. |
| h, i. Ad. et imm. sk. | Queensland.                                                     | Salvin-Godman Coll.      |
| k. Ad. sk.            | New South Wales.                                                | Australian Mus. [P.].    |
| l. Ad. st.            | Port Jackson.                                                   | Australian Mus. [P.].    |
| m. Imm. sk.           | Murray River.                                                   | Sir G. Grey [P.].        |

18. *Phalacrocorax vigua*.

- ? *Maiagûé, Piso, De India, etc.* xvi. p. 83, fig. (1658).  
 ? *Maiagnè Brasiliensium* Pisoni, *Willughby, Orn.* p. 252, pl. lxii. (1678).  
 ? *Le Puffin du Brésil, Brisson, Orn.* vi. p. 138 (1760).  
 Fou brun, de Cayenne, *D'Aubent. Pl. Enl.* ix. pl. 76 [no. 974].  
 ? *Brasilian Petrel, Latham, Gen. Syn.* iii. pt. ii. p. 398 (1785).  
 ? *Procellaria brasilianna, Gmel. S. N.* i. pt. ii. p. 564 (1788).  
*Hydrocorax vigua, Vieill. N. Diet. d'Hist. Nat.* viii. p. 90 (1817, ex Azara) [Paraguay].  
*Carbo graculus, Temm. (nec Linn.) Man. d'Orn.* ii. p. 897 (1820), iv. p. 565 (1840); *Werner, Atl. Ois. d'Eur.* Order 15, pl. 88 [adult in breeding-plumage, good] (1828).  
 • *Haliæus brasiliannus, Licht. Verz. Doubl.* p. 86 (1823); *Wied, Beitr.* iv. p. 895 (1833); *Schomb. Faun. Brit. Guian.* p. 764 (1848); *Burmeister, An. Mus. Nac. Buenos Ayres*, iii. entrega décima-quinta, p. 249 (1888) [Patagonia].  
*Carbo brasiliannus, Spix, Av. Bras.* ii. p. 83, pl. cvi. (1825).  
*Puffinus brasiliannus, Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 228 (1826).  
*Phalacrocorax niger, King, Zool. Journ.* iv. p. 101 (1828) [Straits of Magellan].  
*Haliæus brasiliannus, J. E. Gray, in Griff. ed. Cuv.* iii. p. 591 (1829).  
*Carbo mystacalis, Less. Traité d'Orn.* p. 604 (1831) [Brazil]; *Pucheran, Rev. et Mag. Zool.* 1850, p. 628.  
*Phalacrocorax graculus, Gould (nec Linn.), B. Eur.* v. pl. 408 (1837) [adult in breeding-plumage].  
*Graculus brasiliannus, Gay, Hist. Chili, Zool.* i. p. 490 (1847); *Reichenb. Natatores*, pl. xxxiii. figs. 881-882 (1850); *Bonap. Consop. Arc.* p. 172 (1856); *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 22 (1863); *Tacz. P. Z. S.* 1874, p. 553 [Central Peru]; *Streets, Bull. U.S. Nat. Mus.* no. vii. p. 24 (1877) [Chili].  
*Phalacrocorax brasiliensis, Fraser, P. Z. S.* 1843, p. 119 [Bay of Valdivia]; *Sclat. & Salvin, P. Z. S.* 1873, p. 304 [E. Peru]; *Oustal Miss. Cap Horn, vi. Zool.* p. B 142 (1891).  
*Phalacrocorax brasiliannus, G. R. Gray, List of B.* pt. iii. p. 185 (1844).  
*Graculus magellanicus, Reichenb. Natatores*, pl. xxxv. figs. 2742-3 (1850).  
*Haliæus brasiliensis, Burm. J. f. O.* 1860, p. 267 [R. Parana].  
 ? *Phalacrocorax mexicanus, Taylor, Ibis*, 1860, p. 315 [Honduras\*].  
*Graculus glaucus, Schl. (nec Reichenb.) Mus. Pays-Bas*, vi. *Pelec.* p. 17 (1863).  
*Phalacrocorax brasiliannus, Sclat. & Salvin, P. Z. S.* 1868, p. 146 [Canchitas, Argentine Rep.], 1869, p. 601 [Peru]; *ibid. Ibis*, 1870, p. 499 [Goods Bay, Str. of Magellan]; *Salvin, P. Z. S.* 1870, p. 219 [Castillo, Veragua]; *Berlepsch, J. f. O.* 1874, p. 282 [Sta. Catharina]; *Sclat. & Salvin, P. Z. S.* 1876, p. 17 [Peru]; *Durnf. Ibis*, 1876, p. 162 [Flores I., Buenos Ayres]; *id. Ibis*, 1877, pp. 40, 188, 1878, p. 398 [Patagonia]; *Tacz. P. Z. S.* 1877, p. 745 [W. Peru]; *White, P. Z. S.* 1882, p. 624 [Salta, Buenos Ayres]; *Salvin, P. Z. S.* 1883, p. 427 [Peru]; *Nutt. P. U.S. Nat. Mus.* vi. p. 378 (1883) [Nicaragua]; *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 156 (1884); *Barrois, Auk*, i. p. 270 (1884) [Uruguay]; *Berlepsch & Ihering, Zeit. ges. Orn.* ii. p. 173 (1885) [Rio Grande do Sul]; *Tacz. Orn. Péron*, iii. p. 429 (1886); *Salvin, Ibis*, 1886,

- p. 168 [British Guiana]; *Berlepsch, J. f. O.* 1887, pp. 28, 123; *Sclater & Hudson, Arg. Orn.* ii. p. 91 (1889); *Kerr, Ibis*, 1891, p. 270 [Pilcomayo], 1892, p. 144 [Paraná, Paraguay]; *James, New List Chil. B.* p. 8 (1892); *Berlepsch & Stolz. P. Z. S.* 1892, p. 390 [Peru]; *Hartert, Ibis*, 1893, p. 308 [Aruba]; *Aplin, Ibis*, 1894, p. 197 [Uruguay]; *Lane, Ibis*, 1897, p. 186 [Chili].  
*Graculus brasiliensis*, *G. R. Gray, Hand-l. B.* iii. p. 128 (1871).  
*Phalacrocorax vigua*, *Ridgw. P. U.S. Nat. Mus.* xii. p. 138 (1889).  
*Phalacrocorax* sp., *Holland, Ibis*, 1897, p. 168 [Santa Elena, Argentine Rep.; immature].

*Adult in breeding-plumage.* Head, neck, lower back, rump, upper tail-coverts, and underparts deep glossy black; upper back, wing-coverts, and scapulars *lanceolate*, and of a deep ash-colour, narrowly margined with black; primaries brownish black; secondaries more or less deep ashy; tail black. The naked skin on the throat is bordered by a narrow white band which extends nearly or quite to the eye; a tuft of narrow decomposed white feathers on each side of the head above the ear; a line of small plumes of the same colour forming an irregular superciliary stripe commencing on the lores, and a few scattered white feathers and plumes on the neck. Tail composed of 12 feathers.

*Adult male.* Total length about 30 inches, culmen 2·2, wing 11·3, tail 6·9–7·2, tarsus 2·1.

*Adult female.* Total length about 28 inches, culmen 1·9, wing 10·5, tail in moult 6·2, tarsus 2.

*Adult in non-breeding plumage.* Sides and front of the head, neck, and chest rather browner than in the breeding bird; the white band bordering the bare throat absent, as well as the white plumes on the head and neck.

“Iris dark blue” (*E. W. White*). Bill brownish horn-colour, darkest along the culmen; naked gular skin dusky yellow. The adult at all seasons has the sides of both mandibles roughened, but most conspicuously so during the breeding-season.

*An immature example* from Costa Rica has the top of the head and back of the neck dark brown, inclining to blackish on the back of the neck; back, wing-coverts, and scapulars lanceolate and mostly dark ashy edged with brownish; lower back, rump, and upper tail-coverts brownish black and somewhat glossed; feathers bordering the bare throat whitish, shading into pale brown on the neck and chest, and deeper brown on the breast and belly; quills and tail-feathers blackish, pointed, and margined at the extremity with brownish white.

*In a quite young example* (in first year's plumage) the upper parts are like those of the above but browner; the sides of the head, throat, and fore part of neck pure white; rest of underparts the same, but many of the feathers on the chest, sides, and flanks with pale brown middles.

*Adult birds* from the Pacific coast of South America, especially those from the more southern parts such as Chili, appear to differ from typical examples of *P. vigua* in the following particulars:—

The tail in both sexes is distinctly shorter (in males about 6·5 inches, in the females about 6); the ash-grey colour of the upper back, wing-coverts, and scapulars is somewhat paler, and contrasts more clearly with the black margins to the feathers. The two forms, however, appear to pass imperceptibly into one another, and with our limited series I am not prepared to consider the Pacific bird as even subspecifically distinct from *P. vigua*.

*Hab.* Atlantic and Pacific coasts of South America and Central America as far west as Texas.

|                     | Culm.           | Wing. | Tail.             |                                                                 |                             |
|---------------------|-----------------|-------|-------------------|-----------------------------------------------------------------|-----------------------------|
| a. ♂ ad. sk.        | 1·9             | 11·1  | 6·2               | Chupat, Patagonia,<br>Nov. 12.                                  | H. Durnford, Esq.<br>[P.]   |
| b. Imm. sk.         | 1·75            | 10·6  | 6·2               | Chupat, Patagonia.                                              | H. Durnford, Esq.<br>[P.]   |
| c. ♂ imm. sk.       | 1·9             | 10·6  | 6·4               | Santa Elena, Argentine<br>Rep., Sept. 15.                       | A. Holland, Esq.<br>[C.]    |
| d. Imm. sk.         | 1·9             | 10·6  | 6·5               | Buenos Ayres.                                                   | H. M. Upcher,<br>Esq. [P.]  |
| e. Vix ad. sk.      | 2·2             | 11·3  | 6·8 worn.         | Brazil.                                                         | Dr. J. E. Gray<br>[P.]      |
| f. ♂ ad. sk.        | Imper-<br>fect. | 11·3  | 6·9               | Rio de Janeiro,<br>Brazil, Sept.                                | Capt. W. H.<br>Milner [P.]  |
| g. Ad. sk.          | 2·1             | 11·2  | 6·3 in<br>moult.  | Bahia, Brazil.                                                  | Salvin-Godman<br>Coll.      |
| h. ♀ vix ad.<br>sk. | 1·9             | 10·5  | 6·1 in<br>moult.  | Bahia.                                                          | M. Claassen [P.]            |
| i. Ad. sk.          | 2·15            | 11·1  | 7·2               | Para.                                                           | R. Graham, Esq.<br>[P.]     |
| k. Ad. sk.          | 2·15            | 11·1  | 6·8               | Cayenne.                                                        | H. C. Rothery,<br>Esq. [P.] |
| l. Imm. sk.         | 2·15            | 10·6  | 6·1 worn.         | British Guiana ( <i>Schom-<br/>burgk</i> )                      | Zoological Soc.<br>Coll.    |
| m. Imm. sk.         | 2·15            | 11·0  | 6·9 worn.         | [British Guiana.]                                               | Sir R. Schom-<br>burgk [P.] |
| n. Imm. sk.         | 2·2             | 11·0  | 7·0               | Camacusa, Brit. Gui-<br>ana, April 11 ( <i>H.<br/>Whitely</i> ) | Salvin-Godman<br>Coll.      |
| o. Vix ad. sk.      | 1·9             | 10·1  | 7·0 worn.         | Fort Stockton, Texas<br>( <i>H. E. Dresser</i> ).               | Salvin-Godman<br>Coll.      |
| p. ♂ ad. sk.        | 2·05            | 10·7  | 7·0               | Huamuchal, Guate-<br>mala, Feb. ( <i>O. S.</i> ).               | Salvin-Godman<br>Coll.      |
| q. ♀ ad. sk.        | 1·9             | 10·4  | 6·2 in<br>moult.  | Lake Peten, Guate-<br>mala, April ( <i>O. S.</i> ).             | Salvin-Godman<br>Coll.      |
| r. Imm. sk.         | 2·3             | 11·3  | 7·0               | Costa Rica ( <i>Endres</i> ).                                   | Salvin-Godman<br>Coll.      |
| s. Juv. sk.         | 2·15            | 11·2  | In moult.         | Costa Rica ( <i>Endres</i> ).                                   | Salvin-Godman<br>Coll.      |
| t. ♂ imm. sk.       | 2·15            | 11·3  | 6·5               | Castillo, Veragua<br>( <i>Arce</i> ).                           | Salvin-Godman<br>Coll.      |
| u. Vix ad. sk.      | 2·1             | 11·5  | 6·2 very<br>worn. | Sarayacu, Ecuador<br>( <i>C. Buckley</i> ).                     | Salvin-Godman<br>Coll.      |
| v. Vix ad. sk.      | 1·95            | 11·0  | 6·4 worn.         | Sarayacu, Ecuador<br>( <i>C. Buckley</i> ).                     | Salvin-Godman<br>Coll.      |

|                | Culm. | Wing. | Tail.                    |                                                                        |                            |
|----------------|-------|-------|--------------------------|------------------------------------------------------------------------|----------------------------|
| w. ♂ ad. sk.   | 1·7   | 11·5  | 5·4 worn.                | Laguna de Langui,<br>Peru, Feb. 22 ( <i>H.</i><br><i>Whitely</i> ).    | Salvin-Godman<br>Coll.     |
| x. ♀ imm. sk.  | 1·95  | 10·7  | 6·0                      | Paracas Bay, Peru,<br>Oct. ( <i>Admiral A.</i><br><i>H. Markham</i> ). | Salvin-Godman<br>Coll.     |
| y. Ad. sk.     | 2·1   | 11·3  | 6·4                      | Chili.                                                                 | H. Brydges [C.].           |
| z. Vix ad. sk. | 2·2   | 10·8  | 6·4 in<br>moult.         | Valparaiso.                                                            | Capt. Brett [P.].          |
| a'. ♀ imm. sk. | 1·85  | 9·8   | Very worn<br>& in moult. | Santiago, Chili ( <i>Ley-</i><br><i>bold</i> ).                        | Salvin-Godman<br>Coll.     |
| b'. ♀ imm. sk. | 1·95  | 10·4  | 5·8                      | Laraquete, Chili, Aug.<br>2 ( <i>A. A. Lane</i> ).                     | Berkeley James<br>Bequest. |
| c'. ♂ ad. sk.  | 2·15  | 11·1  | 6·5                      | Corral, Chili, Oct. 13<br>( <i>A. A. Lane</i> ).                       | Berkeley James<br>Bequest. |
| d'. ♀ ad. sk.  | 1·9   | 10·7  | 6·0                      | Corral, Chili, Oct. 8<br>( <i>A. A. Lane</i> ).                        | Berkeley James<br>Bequest. |
| e'. Imm. sk.   | 2·05  | 10·8  | 6·1 in<br>moult.         | No locality, June.                                                     | Earl of Derby<br>[P.].     |
| f'. Skeleton.  | ..    | ..    | ..                       | Upper Ucayali.                                                         | E. Bartlett, Esq.<br>[C.]. |
| g'. Skeleton.  | ..    | ..    | ..                       | Chili.                                                                 | Purchased.                 |
| h'. Skull.     | ..    | ..    | ..                       | Pilcomayo, Jan. 24.                                                    | A. Busk, Esq.<br>[P.].     |

Subsp. *a.* **Phalacrocorax mexicanus.**

- Carbo mexicanus*, *Brandt, Bull. Acad. St. Pétersb.* iii. p. 56 (1837) [Mexico].
- Phalacrocorax graculus*, *D'Orb. (nec Linn.) in Sagra, Hist. Cuba, Ares*, p. 305 (1839) [part, Cuba].
- Phalacrocorax resplendens*, *Lembeye (nec Aud.) Av. Cuba*, p. 119 (1850).
- Phalacrocorax townsendi*, *Lembeye (nec Aud.) Av. Cuba*, p. 120 (1850).
- Graculus mexicanus*, *Bonap. Consp. Av.* p. 173 (1855); *Baird, B. N. Amer.* p. 879 (1860); *Dresser, Ibis*, 1866, p. 45 [S. Texas]; *G. R. Gray, Hand-l. B.* iii. p. 128 (1871); *Coues, Key N. Am. B.* p. 303 (1872); *id. B. N.-W.* p. 588 (1874); *Gundl. J. f. O.* 1875, p. 401 [Cuba]; *Lawr. Bull. U.S. Nat. Mus.* no. iv. p. 50 (1876) [Tehuantepec]; *Sennett, Bull. U.S. Geol. Surv.* iv. p. 64 (1878) [Texas]; *Ridgw. Bull. Nutt. Orn. C.* v. p. 31 (1880) [Illinois]; *Snow, B. Kansas*, p. 13 (1875) [near Lawrence, Kansas].
- Phalacrocorax mexicanus*, *Sclater, P. Z. S.* 1857, p. 207 [Jalapa]; *Moore, P. Z. S.* 1859, p. 65 [Lake of Peten]; *Sclat. & Salvin, Ibis*, 1859, p. 233 [Lake of Peten]; *Nutt. P. U.S. Nat. Mus.* vi. p. 396 (1883) [Nicaragua]; *Coues, Key N. Am. B.* 2nd ed. p. 728 (1884); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 155, fig. (1884); *Ridgw. Man. N. A. B.* p. 79 (1887); *Cory, Auk*, v. p. 71 (1888) [Cuba]; *id. B. W. Ind.* p. 272 (1889) [Cuba]; *Salvin, Ibis*, 1889, p. 376 [Cozumel]; *Cory, Cat. B. W. Ind.* p. 85 (1892); *A. O. U. Check-l.* 2nd ed. p. 43 (1895).
- Phalacrocorax lacustris*, *Gundl. MS., fide Baird, B. N. Amer.* p. 879 (1860).
- Graculus floridanus*, *Schl. (nec Aud.) Mus. Pays-Bas*, vi. *Pelec.* p. 23 (1863).
- Phalacrocorax vigua mexicanus*, *Ridgw. P. U.S. Nat. Mus.* xii. p. 139 (1889).



*Adult in breeding-plumage* [October–December]. Very similar to *P. vigua*, but altogether smaller. Iris green; gular sac orange.

*Adult in non-breeding plumage* [March]. The sides of the head, neck, and chest brown; the white band bordering the bare throat absent, as likewise the long decomposed white feathers forming the ear-tufts. The tiny white plumules are, however, still present. Tail composed of 12 feathers.

*Adult male*. Total length about 28 inches, culmen 1.75–1.85, wing 10.5, tail 6.4, tarsus 1.95.

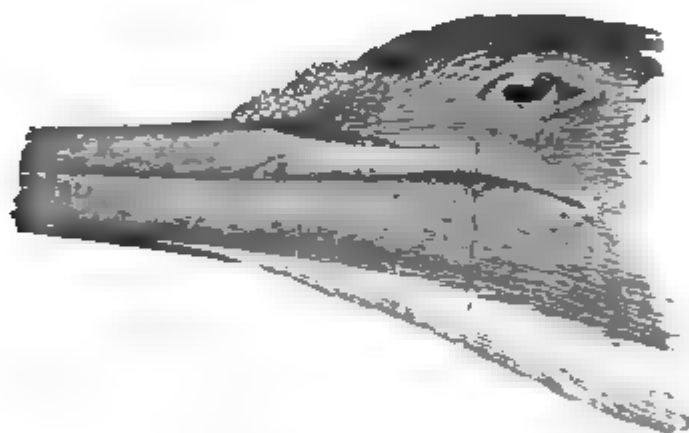
*Adult female*. Total length about 26 inches, culmen 1.65–1.7, wing 10, tail 5.8–6.3, tarsus 1.8.

*Immature birds*. Resemble the young of *P. vigua* of the same age. Iris green; bill dark fleshy, culmen and upper part of lower mandible dusky; gular sac brownish; feet deep black (*Sumichrast*).

*Hab.* Gulf of Mexico; Texas, West Mexico, and Central America as far east as Nicaragua; Cozumel Island, Cuba, and San Salvador.

|                  | Culm | Wing | Tail              |                                                                                       |                        |
|------------------|------|------|-------------------|---------------------------------------------------------------------------------------|------------------------|
| a. ♂ vix ad. sk. | 1.65 | 10.5 | 6.4               | Brownsville, Texas,<br>March 21 ( <i>F. B.</i><br><i>Armstrong</i> ).                 | Salvin-Godman<br>Coll. |
| b. ♂ vix ad. sk. | 1.75 | 10.3 | 6.45              | Brownsville, Texas,<br>March 21 ( <i>F. B. A.</i> ).                                  | Salvin-Godman<br>Coll. |
| c. ♀ imm. sk.    | 1.75 | 9.5  | 5.5 in<br>moult.  | Brownsville, Texas,<br>March 21 ( <i>F. B. A.</i> ).                                  | Salvin-Godman<br>Coll. |
| d. ♀ vix ad. sk. | 1.6  | 10.0 | 5.9               | Aransas Bay, Texas,<br>June 2 ( <i>F. B. A.</i> ).                                    | Salvin-Godman<br>Coll. |
| e. ♂ ad. sk.     | 1.75 | 10.1 | 6.2 in<br>moult.  | Corpus Christi,<br>Texas, Oct. 6 ( <i>F.</i><br><i>B. A.</i> ).                       | Salvin-Godman<br>Coll. |
| f. ♀ ad. sk.     | 1.7  | 9.8  | 5.8               | Corpus Christi,<br>Texas, Oct. 18 ( <i>F.</i><br><i>B. A.</i> ).                      | Salvin-Godman<br>Coll. |
| g. ♂ ad. sk.     | 1.75 | 10.5 | 6.45              | Corpus Christi,<br>Texas, Dec. 14 ( <i>F.</i><br><i>B. A.</i> ).                      | Salvin-Godman<br>Coll. |
| h. ♂ ad. sk.     | 1.7  | 10.4 | 5.8 very<br>worn. | Corpus Christi,<br>Texas, Dec. 23 ( <i>F.</i><br><i>B. A.</i> ).                      | Salvin-Godman<br>Coll. |
| i. ♀ imm. sk.    | 1.8  | 9.5  | 5.5 in<br>moult.  | Valles, San Luis Po-<br>tosi, May ( <i>W. B.</i><br><i>Richardson</i> ).              | Salvin-Godman<br>Coll. |
| k. ♂ imm. sk.    | 1.75 | 10.2 | 6.15              | Tampico, E. Mexico,<br>June ( <i>W. B. R.</i> ).                                      | Salvin-Godman<br>Coll. |
| l. ♂ vix ad. sk. | 1.65 | 9.7  | 6.1 worn.         | Presidio, Mexico, Jan.<br>2 ( <i>A. Forrer</i> ).                                     | Salvin-Godman<br>Coll. |
| m. ♀ vix ad. sk. | 1.7  | 9.6  | 6.3               | Presidio, Mexico, Feb.<br>1 ( <i>A. F.</i> ).                                         | Salvin-Godman<br>Coll. |
| n. ♀ ad. sk.     | 1.65 | 10.0 | 6.0               | Santana, nr. Guad-<br>alajara, Jalisco, W.<br>Mexico, April 3<br>( <i>W. Lloyd</i> ). | Salvin-Godman<br>Coll. |

|                       | Culm. | Wing. | Tail.          |                                               |                     |
|-----------------------|-------|-------|----------------|-----------------------------------------------|---------------------|
| <i>a.</i> ♂ ad. sk.   | 1.85  | 10.1  | 6.2            | Chapala, Jalisco, Mexico, Aug. 26 (W. B. R.). | Salvin-Godman Coll. |
| <i>p.</i> ♂ ad. sk.   | 1.85  | 10.0  | 5.9            | Chiapam, Guatemala, Jan. (O. S.).             | Salvin-Godman Coll. |
| <i>q.</i> Imm. sk.    | 1.7   | 9.5   | 5.5            | Chiapam, Guatemala, Jan. (O. S.).             | Salvin-Godman Coll. |
| <i>r.</i> Imm. sk.    | 1.75  | 9.9   | 5.45 in moult. | Dueñas, Guatemala, (O. S.).                   | Salvin-Godman Coll. |
| <i>s.</i> Imm. sk.    | 1.75  | 9.5   | 5.55           | Dueñas, Guatemala, Sept. (O. S.).             | Salvin-Godman Coll. |
| <i>t.</i> Vix ad. sk. | 1.7   | 9.8   | 6.0            | Lake Peten, Guatemala, April (O. S.).         | Salvin-Godman Coll. |
| <i>u.</i> Ad. sk.     | 1.85  | 9.9   | 5.9            | Cozumel I., Yucatan (G. F. Gaumer).           | Salvin-Godman Coll. |
| <i>v.</i> Ad. sk.     | 1.8   | 10.1  | 6.4 in moult.  | Cozumel I., Yucatan (G. F. G.).               | Salvin-Godman Coll. |
| <i>w.</i> Vix ad. sk. | 1.75  | 9.7   | 5.9            | Cozumel I., Yucatan (G. F. G.).               | Salvin-Godman Coll. |
| <i>x.</i> Vix ad. sk. | 1.7   | 9.5   | 5.6            | Cozumel I., Yucatan (G. F. G.).               | Salvin-Godman Coll. |
| <i>y.</i> Vix ad. sk. | 1.85  | 9.7   | 5.6            | Cozumel I., Yucatan (G. F. G.).               | Salvin-Godman Coll. |

Fig. 3.—*P. carunculatus*Fig. 4. — *P. a/ro/eps.*

19. *Phalacrocorax carunculatus*. (Fig. 3, p. 383.)

Carunculated Shag, *Lath. Gen. Syn.* iii. pt. ii. p. 603 (1786) [part, Queen Charlotte Sound, New Zealand]; *id. Gen. Hist. B.* x. p. 429 (1824).

*Pelecanus carunculatus*, *Gmel. S. N.* i. pt. ii. p. 576 (1788); *Lath. Ind. Orn.* ii. p. 889 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 50 (1790); *Dumont in Levaillant's Dict. Sci. Nat.* x. p. 453 (1818); *Forst. Icon. ined.* pl. 104; *id. Descr. Anim.* p. 102 (1844).

*Hydrocorax carunculatus*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 84 (1817).

*Phalacrocorax carunculatus*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 94 (1826); *Buller, Tr. N. Zeal. Inst.* ix. p. 338, pl. xv. fig. 2 (1877) [Queen Charlotte Sound]; *id. Man. B. N. Zeal.* p. 93 (1882) [nec local.]; *id. B. N. Zeal.* 2nd ed. ii. p. 155 (1888) [part, New Zealand]; *Forbes, Ibis*, 1893, p. 393 [nec S. America].

*Carbo purpurascens*, *Brandt, Bull. Acad. St. Pétersb.* iii. p. 56 (1837).

*Graculus cirrhatus*, *G. R. Gray (nec Gmel.)*, *Ibis*, 1862, p. 251.

*Graculus carunculatus*, *Finsch, J. f. O.* 1874, pp. 174, 213 [part].

*Phalacrocorax cirrhatus*, *Hutton (nec Gmel.)*, *Tr. Z. Zeal. Inst.* xi. p. 396 (1879) [part].

*Adult male in breeding-plumage* (Feb.). Top of the head, sides of the throat, sides and back of the neck black glossed with dull metallic bluish green; interscapular region and greater part of scapulars and wings glossed with oil-green; lower back, rump, and upper tail-coverts dark metallic bluish green; quills and tail-feathers black; a wide alar bar, formed by the inner median wing-coverts, and a dorsal patch white; some of the outer scapulars also white and forming a white band; middle of the throat and fore neck and rest of underparts pure white; the white feathers on the throat extending in a narrow band for a considerable distance along the middle of the bare inter-ramal skin. No trace of a crest on the top of the head; nasal caruncles well-developed. Tail composed of 12 feathers. Total length about 30 inches, culmen from feathers on forehead to tip 2.55, depth to cutting-edge 0.5, wing 12.3, tail 5.3, tarsus 2.6, outermost toe and claw 4.7. [*Mus. Rothschild: Cook's Straits*, 4 Feb., 1895.]

*Adult female* (a less mature specimen than the above). Similar in plumage, but the alar band is imperfectly developed and much narrower; the dorsal patch is also less developed, and none of the outer scapulars show a trace of white. No trace of a crest, but the nasal wattles are well-developed. Dimensions similar to the above. [*Mus. Rothschild: Cook's Straits*, 4 Feb., 1895.]

"Nasal caruncles red; naked space round the eye bluish purple; feet yellowish brown" (*Buller*).

*Immature female*. Has all the dark parts of the plumage brown slightly glossed with green, especially on the lower back and rump; the wing-coverts and scapulars paler brown and with whitish margins; the white underparts are like those of the adult. Nasal caruncles imperceptible; the culmen is even longer than that of either the male or female adult—length 2.7 inches, depth to cutting-edge 0.45. [*Mus. Rothschild: Cook's Straits*, 4 Feb., 1895.]

*Hab.* Queen Charlotte Sound, New Zealand.

20. *Phalacrocorax onslowi*.

- Graculus carunculatus*, *Hutton (nec Gmel.)*, *Ibis*, 1872, p. 249 [Chatham Is.]; *Travers*, *Tr. N. Zeal. Inst.* v. p. 221 (1873) [Pitt I.].  
*Phalacrocorax carunculatus*, *Hutton (nec Gmel.)*, *Tr. N. Zeal. Inst.* v. p. 224 (1873); *Buller*, *B. N. Zeal.* p. 332, pl. left-hand fig. (1873) [nec syn.]; *id.* *Tr. N. Zeal. Inst.* ix. p. 338, pl. xv. fig. 1 (1877) [Chatham Is.]; *id.* *Man. B. N. Zeal.* p. 93, pl. xxiv. fig. 1 (1882) [descrip. & pl. only].  
*Phalacrocorax cirrhatus*, *Buller (nec Gmel.)*, *Man. B. N. Zeal.* p. 93 (1882) [nec local.].  
*Phalacrocorax onslowi*, *Forbes*, *Ibis*, 1893, p. 533 [Chatham Is.]; *Buller*, *Tr. N. Zeal. Inst.* xxvii. p. 129 (1895).  
*Phalacrocorax rothschildi*, *Forbes*, *Ibis*, 1893, pp. 535-537, 540 [Chatham Is.].  
*Phalacrocorax imperialis*, *Buller (nec King)*, *B. N. Zeal.* 2nd ed. ii. p. 153, pl. xxxviii. fig. 2 (1888) [Chatham Is.].

*Adult in breeding-plumage* (March). Differs from *P. carunculatus* in its much smaller size and in possessing a well-developed crest; back of the head and neck glossed with purplish or steel-blue; lower back and rump similarly coloured. Nasal wattles well-developed. The alar bar is always, and the dorsal patch generally well-developed, and in the most adult examples some at least of the outer scapulars are white. Tail composed of 12 feathers. "Caruncles at base of bill yellow; skin round eye blue, between eye and mouth orange; legs scarlet" (*Buller*). Total length about 25 inches, culmen from feathers on forehead to tip 2.15, depth to cutting-edge at nostril 0.35, wing 10.4, tail 4.5, tarsus 2.55, outermost toe and claw 3.9.

*Adult in non-breeding plumage*. Similar to the above, but without a crest.

*Immature*. Differs from the adult in having the dark parts of the plumage brown, darkest on the back, scapulars, and rump, which are slightly glossed with green, and palest on the wing-coverts and outer scapulars, which are edged with white. [*Mus. Rothschild.*]

*Hab.* Chatham Islands.

*a, b.* Ad. sk.

Chatham Islands.

Dr. H.O. Forbes[?].  
 (Types of *P. rothschildi*, Forbes.)

21. *Phalacrocorax stewarti*. (Plate V. A.)

- ? Tufted Shag, *Lath. Gen. Syn.* iii. pt. ii. p. 606 (1785) [Queen Charlotte Sound, New Zealand]; *id.* *Gen. Hist. B.* x. p. 431 (1824).  
 ? *Pelecanus cirrhatus*, *Gmel. S. N.* i. pt. ii. p. 576 (1788) [14 tail-feathers\*]; *Lath. Ind. Orn.* ii. p. 890 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 49 (1790).  
*Hydrocorax cirratus*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 84 (1817).  
*Pelecanus cirratus*, *Dumont in Levrault's Dict. Sci. Nat.* x. p. 453 (1818).

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\* This is doubtless an error.

*Phalacrocorax cirrhatus*, *Steph. in. Shaw's Gen. Zool.* xiii. pt. i. p. 95 (1826).

*Phalacrocorax carunculatus*, *Buller, B. N. Zeal.* 2nd ed. ii. p. 155 (1888) [part: south of South Island, N. Zealand].

*Phalacrocorax colensoi*, *Buller, B. N. Zeal.* 2nd ed. ii. p. 160 (1888) [part: The Bluff, Southland, New Zealand].

*Adult in full breeding-plumage.* Much like *P. onslowi* in plumage, but the neck is somewhat greener; a well-developed crest, white alar bar, and dorsal patch are present, but there is no trace of nasal wattles, the lores being thinly feathered; behind and above the eye a thin patch of white hair-like feathers. Tail composed of 12 feathers. Eyelid light blue; naked skin on lores and sides of face very dark blue; a row of small red warts between the culmen and the eye; naked skin at base of lower mandible and gular pouch arterial red. Total length about 29 inches, culmen from feathers on forehead to tip 2.4, depth to cutting-edge 0.35, wing 11.6-11.7, tail 5.1-5.3, tarsus 2.8, outermost toe and claw 4.3.

Although the bill is nearly as long as that of *P. carunculatus*, it is not nearly so stout.

*Adult in non-breeding plumage.* Similar to the above, but without a crest.

*Immature.* Very similar to the immature of *P. onslowi*. In a bird apparently changing to the adult plumage the white alar bar is strongly developed.

*Hab.* Stewart Island and South Island, New Zealand.

a-c. ♀ ad., vix The Bluff, Southland, New Zea- Baron A. von Hugel  
ad. et imm. sk. land, Feb. [P]. (Types of  
the species)

## 22. *Phalacrocorax colensoi*.

*Phalacrocorax colensoi*, *Buller, B. N. Zeal.* 2nd ed. ii. p. 160 (1888) [Auckland I. only]; *Forbes, Ibis*, 1893, pp. 538, 539, 540; *Buller, Ibis*, 1895, p. 39; *id. Tr. N. Z. Inst.* xxvii p. 129 (1895).

*Adult in full breeding-plumage.* Very similar in general appearance to *P. onslowi*, having a well-developed crest, but as in *P. stewarti* the nasal wattles are entirely absent. The alar bar is generally less defined and there is never any trace of the white dorsal patch; the white band down the fore-neck, which unites the throat and chest, is much narrower, the dark sides of the neck being only narrowly divided from one another. Tail composed of 12 feathers. Total length about 25 inches, culmen from feathers on forehead to tip 2.05, depth to cutting-edge 0.25, wing 10.6-10.9, tail 5, tarsus 2.35, outermost toe and claw 3.07.

*An immature bird* has the white alar bars entirely wanting.

*Hab.* Auckland Island.

a. Imm sk [Auckland Island.] L. W. Milles, Esq.  
[P].  
b. ♀ ad. sk Auckland Island, March. Hon. W. Rothschild  
[E].

23. *Phalacrocorax campbelli*.

*Phalacrocorax magellanicus*, *Hutton (nec Gmel.)*, *Tr. N. Zeal. Inst.* xi. p. 338 (1879) [Campbell I.]; *Buller, Man. B. N. Zeal.* p. 94 (1882).

*Phalacrocorax nycthemerus*, *Cab. fide Bonap. Consp. Av.* ii. p. 177 (1855) [descrip. null.]; *Hutton, P. Linn. Soc. N. S. W.* iv. p. 357 (1879); *Buller, Man. B. N. Zeal.* p. 96 (1882) [Macquarie Is. !]; *id. B. N. Zeal.* 2nd ed. ii. p. 167 (1888) [Campbell I.].

*Urile campbelli*, *Filhol, Bull. Soc. Philom.* (2) ii. p. 132 (1878) [Campbell I.].

*Phalacrocorax campbelli*, *Filhol, Mém. Pass. Vénus à l'île Campbell*, iii. pt. ii. p. 55 (1885).

*Adult in breeding-plumage.* Differs from *P. colensoi* in having the fore-neck entirely black, the white on the chin and throat forming an isolated patch; as in *P. colensoi*, there is a well-developed crest, the nasal caruncles are absent, the white alar bar narrower, and the white dorsal patch is entirely wanting. There are a number of hair-like white feathers forming a thin patch above the eye and scattered over the head and neck. Tail composed of 12 feathers. Total length about 25 inches, culmen from feathers on forehead to tip 2·1, depth to cutting-edge 0·25, wing 10·5, tail 4·9, tarsus 2·4, outermost toe and claw 3·6.

Naked skin in front of the eye blue with crimson dots; feet flesh-colour (*Hutton*). Bill blackish brown, yellowish towards the gape; feet dark brown (*Buller*).

*Immature birds* have the dark parts of the plumage mostly dark brown slightly glossed with green, the white throat-patch being as widely separated from the breast as in the adult. [*Mus. Rothschild.*]

*Hab.* Campbell Island.

a. ♂ ad. sk.      Campbell Island, July.      Hon. W. Rothschild  
[E.].

24. *Phalacrocorax bougainvillii*.

*Carbo bougainvillii*, *Lesson, Voy. Thétis et de L'Espérance*, ii. p. 331 (1837) [Chili].

*Carbo albigula*, *Brandt, Bull. Acad. St. Pétersb.* iii. p. 57 (6th Oct., 1837) [Chili].

*Haliaeetus albigula*, *Tschudi, Faun. Peru., Orn.* p. 313 (1845).

*Phalacrocorax albigula*, *G. R. Gray, List of B.* pt. iii. p. 187 (1844) [Valparaiso].

*Graculus bougainvillei*, *Gay, Hist. Chili, Zool.* i. p. 491 (1847); *G. R. Gray, Hand-l. B.* iii. p. 128 (1871); *Tacz. P. Z. S.* 1874, p. 554 [Chorillos, Central Peru].

*Graculus albigula*, *Reichenb. Natatores*, pl. xxxii.<sup>b</sup> figs. 2309-10 (1850).

*Urile bougainvillii*, *Bonap. Consp. Av.* p. 176 (1855).

*Carbo atriceps*, *Cassin (nec King), U.S. Expl. Exped., Orn.* p. 371 (1858).

*Phalacrocorax bougainvillei*, *Tacz. Orn. Pérou*, iii. p. 430 (1886); *Berlepsch & Stolz. P. Z. S.* 1892, p. 399 [Peru].

*Adult in breeding-plumage.* Top of the head and crest dark oil-green, rest of the head and neck black glossed with dark steel-blue;

middle of the interscapular region, lower back, rump, upper tail-coverts, and thighs glossed with dark bluish green; sides of the upper back, wing-coverts, and scapulars dull bronze-green, with narrow margins of darker greenish blue; chin and throat, base of fore-neck, and rest of underparts pure white; a patch of white plumes above the eye and scattered here and there on the neck; quills and tail-feathers brownish black. Tail composed of 12 feathers. Total length about 30 inches, culmen 2·85–2·9, depth to cutting-edge 0·35, wing 11·4–11·8, tail 4·3–4·5, tarsus 2·55–2·66, outermost toe and claw 3·7–4.

*Vix adult in non-breeding plumage.* Similar to the above, but the head and neck with a dull greenish gloss, much the same as that on the lower back and rump; sides of the back, wing-coverts, and scapulars of a more brownish bronze, and with much less gloss, the darker margins being also much less conspicuous.

*Hab.* Pacific coast of South America; Peru and Chili.

|                |             |                                              |
|----------------|-------------|----------------------------------------------|
| a. Ad. sk.     | Valparaiso. | Mr. A. Bartlett [E.]                         |
| b. Vix ad. sk. | Valparaiso. | Sir W. Burnett & Capt.<br>Fitzroy, R.N. [P.] |

## 25. *Phalacrocorax magellanicus*.

*Magellanic Shag*, *Lath. Gen. Syn.* iii. pt. ii. p. 604 (1785); *id. Gen. Hist. B.* x. p. 430 (1824).

*Pelecanus magellanicus*, *Gmel. S. N.* i. pt. ii. p. 576 (1788); *Lath. Ind. Orn.* ii. p. 889 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 51 (1790); *Forst. Icon. ined.* pl. 105.

*Hydrocorax magellanicus*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 87 (1817).

*Hydrocorax leucogaster*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 90 (1817) [Russia?].

*Phalacrocorax magellanicus*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 89 (1826); *G. R. Gray, List of B.* pt. iii. p. 186 (1841); *Jacq. & Pucher. Voy. Pôle Sud*, iii. p. 128 (1853); *Sclater, P. Z. S.* 1860, p. 391; *Abbott, Ibis*, 1861, p. 167 [Falkland Is.]; *Sclat. & Salvem. Ibis*, 1870, p. 499 [Port Charruca]; *Sharpe, P. Z. S.* 1881, p. 11 [Straits of Magellan]; *Oustal. Mus. Cap Horn*, vi. Zool. p. B. 150 [part] (1891).

*Phalacrocorax sarmientonus*, *King, P. Z. S.* 1831, p. 30 [Straits of Magellan].

*Phalacrocorax erythroptus*, *King, P. Z. S.* 1831, p. 30 [Straits of Magellan].

*Carbo leucotis*, *Cur., Lesson, Traité d'Orn.* p. 604 (1831) [Falkland Is.].

*Cormoran magellanique*, *Hombr. & Jacq. Voy. Pôle Sud, Atl. Océ.* pl. 31 bis (1842–53).

*Graculus magellanicus*, *Gay, Hist. Chili, Zool.* i. p. 492 (1847); *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 21 (1863) [nec "d"]; *G. R. Gray, Hand-l. B.* iii. p. 128 (1871).

*Graculus sarmientonus*, *Gay, Hist. Chili, Zool.* i. p. 490 (1847).

*Urile magellanicus*, *Bonap. Consp. Av.* p. 177 (1855); *Ridgw. P. U.S. Nat. Mus.* xii. p. 139 (1889) [San Martin I.].

*Phalacrocorax mentalis*, *Temm., Bonap. Consp. Av.* ii. p. 175 (1855) [juv. only].



*Carbo magellanicus*, Cassin, *U.S. Expl. Exped.*, Orn. p. 370 (1858).  
*Graculus penicillatus*, Schl. Mus. Pays-Bas, vi. Pelec. p. 18 (1863)  
 [part, no. 1].

*Adult in full breeding-plumage.* Entire head and neck black, with dark steel-blue gloss; interscapular region and wings dull oil-green, each feather indistinctly and narrowly margined with darker colour; lower back, rump, upper and under tail-coverts, flanks, and thighs black glossed with dark steel-blue, and thickly interspersed with long narrow white feathers; similar feathers are sparsely scattered over the head, neck, and upper parts; a small white patch on the ear-coverts; chest and rest of underparts white; quills and tail-feathers brownish black. The crest, which is well-developed, is probably retained for a short period only, being apparently shed before the scattered white filaments make their appearance among the plumage of the upper parts. Nasal caruncles not very marked; naked skin on the sides of the throat carunculated. Tail composed of 12 feathers. Total length about 26 inches, culmen from feathers on forehead to tip 1·8–2·3, depth to cutting-edge 0·3, wing 9·6–10·6, tail 5·1–6, tarsus 2–2·3, outermost toe and claw 3·7.

*Adult in winter plumage.* Chin, throat, and fore-neck white like the rest of the underparts.

Iris reddish brown; lids and wattled skin on throat of a blood-red colour; legs and feet yellow.

A number of specimens show every intermediate stage between the particoloured neck with the fore part white and the entirely black neck. In all these specimens the white feathers are apparently being cast and replaced by black ones. In several examples the whole neck is entirely black, with only the chin and throat white; some specimens in this plumage have the long white feathers characteristic of the breeding-season.

*An immature male* has the entire head, neck, and chest as well as the upper parts brownish black with some greenish gloss, especially on the lower back; only the inter-ramal band of feathers on the throat white, as well as a number of tiny plume-like white feathers scattered about the head and neck; the breast and belly lighter brown than the chest and mixed here and there with white feathers.

*A more mature bird* has the plumage similar to the above, but all the feathers of the breast and rest of underparts are white with brown extremities, giving these parts a mottled appearance.

*A still older bird* has the plumage very similar to the above, but with rather more greenish gloss on the upper parts, and the underparts below the breast pure white, with only a few scattered feathers with brown tips.

*Hab.* Southern coasts of South America, and Falkland Islands.

|                       |                              |                                            |
|-----------------------|------------------------------|--------------------------------------------|
| <i>a-c.</i> Ad. sk.   | Falkland Islands.            | Capt. Kellett & Lieut.<br>Wood, R.N. [P.]. |
| <i>d, e.</i> Ad. sk.  | Falkland Islands.            | Tweeddale Coll.                            |
| <i>f.</i> Ad. sk.     | Berkeley Sound, Falkland Is. | Antarctic Exped.                           |
| <i>g.</i> Vix ad. sk. | Berkeley Sound, April 19     | McCormick Bequest.                         |
|                       | (R. McCormick).              |                                            |

|                                 |                                                 |                                                           |
|---------------------------------|-------------------------------------------------|-----------------------------------------------------------|
| A. ♂ imm. sk.                   | Staten I., Tierra del Fuego.                    | M. Symonds Clarke, Esq. [P.].                             |
| i. Ad. sk.                      | Straits of Magellan (Capt. P. P. King).         | The Admiralty [P.]. (Type of <i>P. erythroga</i> , King.) |
| k. Imm. sk.                     | Straits of Magellan (Capt. P. P. King).         | The Admiralty [P.].                                       |
| l. ♀ ad. sk.                    | Trinidad Channel, Straits of Magellan, Feb. 27. | Dr. Coppinger [P.].                                       |
| m. ♂ imm. sk.                   | Port Tamar, Straits of Magellan, March 27.      | Salvin-Godman Coll.                                       |
| n. Sternum and pectoral girdle. | Staten Land.                                    | M. Symonds Clarke, Esq. [P.].                             |
| o. Head in spirits.             | Falkland Islands.                               | 'Challenger' Exped.                                       |

**26. *Phalacrocorax atriceps*.** (Fig. 4, p. 383, & fig. 5, p. 391.)

*Phalacrocorax atriceps*, King, *Zool. Journ.* iv. p. 102 (1828) [Straits of Magellan].

*Phalacrocorax imperialis*, King, *P. Z. S.* 1831, p. 30 [Straits of Magellan]; *Sclat. & Salvin*, *P. Z. S.* 1878, p. 652 [Messier Channel]; *id.* *Voy. Chall.*, *Zool.* pt. viii. p. 120, pl. xxv. fig. 1 (1860); *Sharpe*, *P. Z. S.* 1881, p. 11 [Tom Bay, Magellan]; *Forbes*, *Ibis*, 1893, pp. 534-537, 541.

*Phalacrocorax carunculatus*, Gould, *Zool. Voy. Beagle*, pt. iii. *Birds*, p. 145 (1841) [Port St. Julian]; *Sclat. & Salvin*, *Ibis*, 1869, p. 284 [Sta. Magdalena], 1870, pp. 499, 500, 504 [Port Churrucá]; *Hutton*, *Tr. N. Zeal. Inst.* xi. pp. 332-337 (1879) [part]; *Oustal. Miss. Cap Horn*, vi. *Zool.* p. B. 144 [part], pl. vi. [fig. in background] (1891).

*Phalacrocorax cirrhatus*, G. R. Gray, *List of B.* pt. iii. p. 186 [spec. a] (1844); *Sclat. & Salvin*, *Ibis*, 1868, p. 189 [Straits of Magellan].

*Graculus cirrhatus*, Gay, *Hist. Chili*, *Zool.* i. p. 490 (1847).

*Hypoleucus cirrhatus*, Bonap. *Consp. Av.* p. 174 (1855).

*Urile carunculatus*, Bonap. *Consp. Av.* p. 176 (1855).

*Graculus elegans*, Philippi, *Wieg. Arch.* xxiv. p. 305 (1858) [Chili].

*Graculus carunculatus*, Schl. *Mus. Pays-Bas*, vi. *Pelec.* p. 20 (1863) [part]; G. R. Gray, *Hand-l. B.* iii. p. 128 (1871) [part].

*Haliastur atriceps*, Burmeister, *An. Mus. Nac. Buenos Ayres*, iii. entrega décimaquinta, p. 249 (1888) [Magellan].

*Adult in breeding-plumage.* Very similar to *P. albiventer* and *P. verrucosus*, but easily distinguished by the different disposition of the black and white on the head and neck; in the two former the ear is situated in the middle of the black plumage, but in the present species the opening is in the middle of the white plumage; the black plumage commences behind the eye, passes along the sides of the crown and down the back of the neck in a much narrower band; the crest and wattles appear to be less developed than in *P. albiventer*, and, in the most adult specimens, in addition to the white alar bar there is a large dorsal patch of the same colour. Tail composed of 12 feathers. Iris brown; naked skin round the eyes bright French blue; nasal caruncles saffron mixed with gamboge-yellow;



Fig. 5. *P. atriceps*.

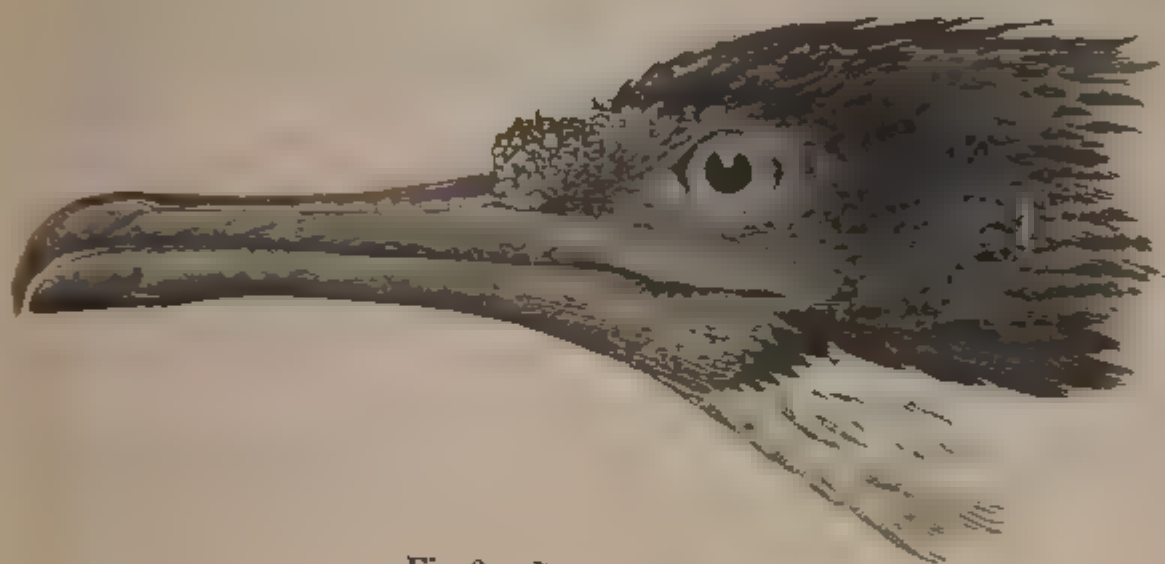


Fig. 6. - *P. verrucosus*.

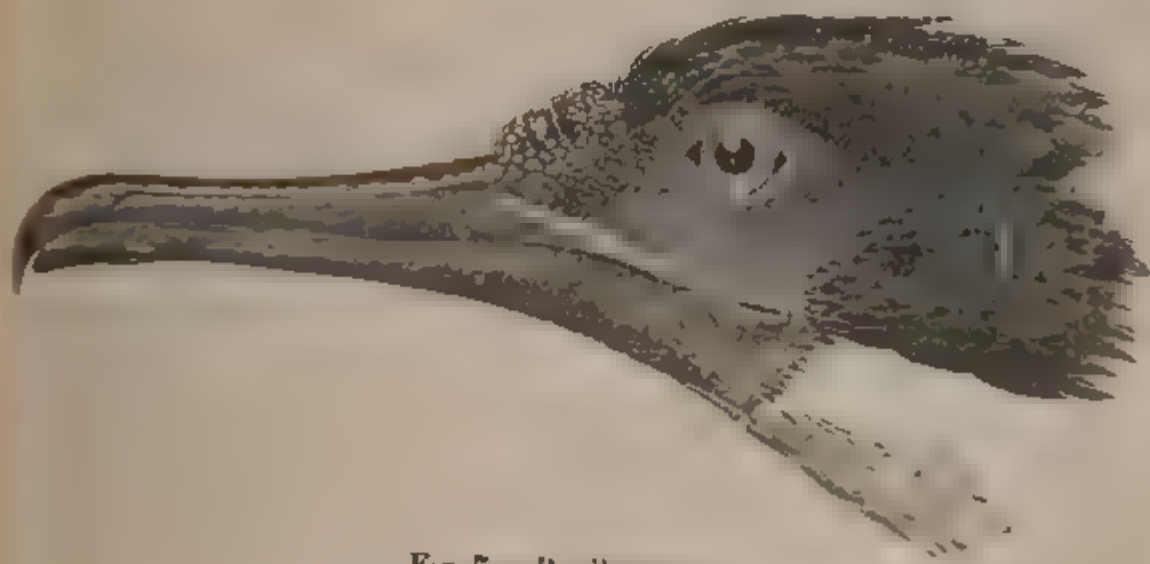


Fig 7. *P. albicinctus*.

marks between the eye and angle of the gape orange; legs and feet scarlet (*Darwin*). Total length about 29 inches, culmen from feathers on forehead to tip 2·4, depth to cutting-edge 0·4, wing 11·3, tail 5·2, tarsus 2·65, outermost toe and claw 4·1.

In younger examples the dorsal patch is less developed or absent.

There is a nearly adult specimen from South Georgia in the Rothschild Museum which appears to belong to this species; the bill is, however, considerably shorter. In this specimen the alar bar is present, but there is no trace of a white dorsal patch; a fairly long crest is making its appearance, while above and behind the eye there are a few white scattered hair-like feathers, indicating that the bird is in breeding-plumage. The South Georgia bird may prove to be a distinct form, but without more material it is impossible to form an opinion. Total length about 29 inches, culmen from feathers on forehead to tip 2, depth to cutting-edge 0·35, wing 11·2, tail 5, tarsus 2·5, outermost toe and claw 4.

*Hab.* South-west coast of South America. ? South Georgia.

|                        |                                                  |                     |
|------------------------|--------------------------------------------------|---------------------|
| a. ♂ vix ad. sk.       | Dorral, Chili ( <i>Weishaupt</i> ).              | Salvin-Godman Coll. |
| b. ♂ ad. sk.           | Island of Chiloe, Dec.-Jan. ( <i>Reed</i> ).     | Salvin-Godman Coll. |
| c. ♂ ad. sk.           | Hale Cove Harbour, Messier Channel, Jan. 2.      | 'Challenger' Exped. |
| d. Imm. sk.            | Straits of Magellan ( <i>Capt. P. P. King</i> ). | The Admiralty [P.]. |
| e. Skull.              | Straits of Magellan.                             | 'Challenger' Exped. |
| f. Skeleton (mounted). | Chili.                                           | Purchased.          |

## 27. *Phalacrocorax albiventer*. (Fig. 7, p. 391.)

*Carbo albiventer*, Lesson, *Traité d'Orn.* p. 604 (1831) [Falkland Is.]; *Pucheran, Rev. et Mag. Zool.* 1850, p. 627.

*Phalacrocorax cirrhatus*, G. R. Gray (*nec Gmel.*), *List of B.* pt. iii. p. 186 (1844) [spec. b, c, i].

*Graculus cirrhatus*, G. R. Gray, *Voy. Erebus & Terror, Birds*, p. 19 (1845).

*Graculus albiventer*, Gay, *Hist. Chili, Zool.* i. p. 491 (1847).

*Urile purpurascens*, Bonap. *Consp. Av.* p. 177 (1855).

*Phalacrocorax carunculatus*, Selater (*nec Gmel.*), *P. Z. S.* 1860, p. 391; Abbott, *Ibis*, 1861, p. 166 [Falkland Is.]; *Oustal. Miss. Cap Horn*, vi. p. B. 144 [part], pl. vi [front figure only] (1891).

*Phalacrocorax albiventris*, Selater, *P. Z. S.* 1879, p. 310 [eggs]; Selater & Salv. *Voy. Chall., Zool.* pt. viii. p. 157, pl. xxv. fig. 2 (1880); Forbes, *Ibis*, 1893, pp. 535, 540.

*Haliæus verrucosus*, Burmeister, (*nec Cab.*) *An. Mus. Nac. Buenos Ayres*, iii. entrega décimaquinta, p. 249 (1888) [Patagonia].

*Urile albiventer*, Ridgw. *P. U.S. Nat. Mus.* xii. p. 139 (1889) [San Martin I.].

*Adult in full breeding-plumage.* Very similar in general appearance to *P. onslowi*, but the white band of feathers on the inter-ramal region scarcely extends beyond a vertical line drawn from the angle of the gape, and the purple-black of the sides of the head commences almost in a line with the commissure of the bill, whereas in *P. on-*

*lowi* it commences much nearer the median line of the throat. There is a well-developed crest, which generally appears to have a tendency to curl forward, a thin patch of white hair-like feathers above and behind the eye. Nasal caruncles well-developed, white alar bar moderately so, and the white dorsal patch is always wanting. Tail composed of 12 feathers. Total length about 27 inches, culmen from feathers on forehead to tip 2·3, depth to cutting-edge 0·35, wing 11·3, tail 5·3, tarsus 2·5, outermost toe and claw 4.

One example, with a fairly well-developed crest and nasal caruncles, has no trace of the white alar bar; apparently this specimen, though mature, is not a very old bird.

*Adult in non-breeding plumage.* Similar to the above, but the crest and the patch of white feathers behind the eye are absent, and the plumage of the upper parts less brilliant.

*Hab.* Extreme south of South America and Falkland Islands.

|                                    |                                                                           |                                                  |
|------------------------------------|---------------------------------------------------------------------------|--------------------------------------------------|
| <i>a, b.</i> Ad. et vix<br>ad. sk. | Falkland Islands ( <i>Leconte</i> ).                                      | Salvin-Godman Coll.                              |
| <i>c.</i> Ad. sk.                  | Falkland Islands.                                                         | Tweeddale Coll.                                  |
| <i>d, e.</i> Ad. sk. et<br>st.     | Falkland Islands.                                                         | Antarctic Exped.                                 |
| <i>f.</i> ♂ ad. sk.                | Berkeley Sound, E.<br>Falklands, Aug. 3 ( <i>R.</i><br><i>McCormick</i> ) | McCormick Bequest.                               |
| <i>g.</i> Ad. sk.                  | Port St. Julian, Patagonia.                                               | Sir W. Burnett &<br>Capt. Fitzroy, R.N.<br>[P.]. |
| <i>h.</i> ♀ imm. sk.               | Tom Bay, Straits of Ma-<br>gellan, April 4.                               | Dr. Coppinger [C.].                              |

## 28. *Phalacrocorax verrucosus*. (Fig. 6, p. 391.)

*Phalacrocorax cirrhatus*, *G. R. Gray* (*nec Gmel.*), *List of B.* pt. iii. p. 186 (1844) [specs. *d-h*].

*Graculus carunculatus*, *Coues & Kidder* (*nec Gmel.*), *Bull. U.S. Nat. Mus.* ii. p. 7 (1875), iii. p. 8 (1876) [Kerguelen]; *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 20 (1863) [part]; ? *Finsch*, *J. f. O.* 1870, p. 375 [Crozet Is.].

*Halieus* (*Hypoleucus*) *verrucosus*, *Cab. J. f. O.* 1875, p. 540, 1876, pl. i. fig. 1 [Kerguelen].

*Phalacrocorax verrucosus*, *Sclater & Salvin*, *P. Z. S.* 1878, p. 652 [Betsy Cove, Kerguelen]; *Sclater*, *P. Z. S.* 1879, p. 310 [eggs]; *Sharpe*, *Phil. Trans.* extra vol. 168. p. 149 (1879) [Kerguelen]; *Sclat. & Salv. Voy. Chall.*, *Zool.* pt. viii. p. 122, pl. xxvi. (1880); *Studer*, *Forschungs.* 'Gazelle,' iii. p. 103, pl. 15 (1889); *Forbes*, *Ibis*, 1893, pp. 535, 540.

*Adult in breeding-plumage.* Practically similar to *P. albiventer*, but the black on the sides of the head is continued downwards in a narrow band which runs between the white throat and the naked skin and extends halfway towards the middle line of the throat. None of the specimens shows any trace of a white alar bar. The bird described appears to be fully adult and in the most complete breeding-plumage. Tail composed of 12 feathers. Total length

about 27 inches, culmen from feathers on forehead 2.1, depth to cutting-edge 0.4, wing 10.6, tail 5, tarsus 2.35, outermost toe and claw 4.

Two specimens obtained on the 13th of January during the voyage of H.M.S. 'Challenger,' though apparently fully adult, show no trace of a crest, but a careful examination shows that the shorter feathers on the top of the head are being renewed by moult, the crest having obviously been cast. The nasal caruncles are well-developed.

An adult shot on the 4th of July shows the crest partially grown, and the nasal caruncles largely developed, but no trace of an alar bar.

A younger male (obtained on the 13th of January) has the lower breast and belly mixed with dark brown feathers, otherwise the upper parts are very similar to those of the adult and the nasal caruncles are well-developed.

Two still younger females (obtained on the 13th of January) have all the underparts brown with the exception of the chin and throat: the upper parts brown, mixed here and there with metallic feathers like those of the adult.

The more mature of these two birds has fairly well-developed nasal caruncles, but in the younger example they are entirely wanting.

*Hab.* Kerguelen's Land; ? Crozette Islands.

| <i>a-c.</i> Ad. et imm.<br>sk.           | Kerguelen's Land.                                               | Antarctic Exped.    |
|------------------------------------------|-----------------------------------------------------------------|---------------------|
| <i>d-h.</i> ♂ ♀ ad. et<br>imm. sk.       | Betsy Cove, Kerguelen, Jan-<br>uary 13.                         | 'Challenger' Exped. |
| <i>i.</i> Ad. sk.                        | Christmas Harbour, Kerguelen<br>July 4 ( <i>R. McCormick</i> ). | McCormick Bequest.  |
| <i>k.</i> Vix ad. sk.                    | [* New Zealand ]                                                | Antarctic Exped.    |
| <i>l.</i> Skull.                         | Kerguelen.                                                      | 'Challenger' Exped. |
| <i>m, n.</i> Ad. et pull.<br>in spirits. | Betsy Cove, Kerguelen.                                          | 'Challenger' Exped. |
| <i>o-r.</i> Embryos<br>in spirits.       | Betsy Cove, Kerguelen, June.                                    | 'Challenger' Exped. |

## 29. *Phalacrocorax varius*.

Pied Shag, *Latham, Gen. Syn.* iii. pt. ii. p. 605 (1785) [Queen Charlotte Sound, N. Zealand]; *id. Gen. Hist. B.* x. p. 428 (1824).

*Pelecanus varius*, *Gmel. S. N.* i. pt. ii. p. 576 (1788); *Lath. Ind. Orn.* ii. p. 880 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 51 (1790).

*Hydrocorax fuscescens*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 86 (1817).

*Hydrocorax varius*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 90 (1817).

*Pelecanus fuscescens*, *Vieill. Tabl. Encycl. Méth.* i. p. 341 (1820).

*Phalacrocorax varius*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 92 (1826); *G. R. Gray, List of B.* pt. iii. p. 187 (1844); *Buller, B. N. Zeal.* p. 328 (1873) [part syn.]; *id. Man. B. N. Zeal.* p. 95 (1882);

\* Cf. H. O. Forbes, *Ibis*, 1893, p. 541.

- [part, New Zealand]; *id.* *B. N. Zeal.* 2nd ed. ii. p. 149, pl. xxxviii. fig. 1 (1888).
- Pelecanus pica*, *Forst. Icon. ined.* pl. 106; *id.* *Descr. Anim.* p. 104 (1844).
- Graculus varius*, *G. R. Gray, Voy. Erebus & Terror, Birds*, p. 19 (1845); *Reichenb. Natatores*, pl. xxxv. fig. 874 (1850); *G. R. Gray, Ibis*, 1862, p. 251; *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 20 (1863) [part, N. Zealand]; *G. R. Gray, Hand-l. B.* iii. p. 128 (1871) [part]; *Finsch, J. f. O.* 1874, pp. 174, 215 [New Zealand only].
- Carbo fucosus*, *Peale, Zool. Expl. Exped., Birds*, p. 268 (1848).
- Hypoleucus varius*, *Reichenb. Nat. Syst. Vög.* p. vii (1852); *Bonap. Consp. Av.* p. 173 (1855).
- Carbo hypoleucus*, *Cassin (nec Brandt), U.S. Expl. Exped., Orn.* p. 372 (1858) [Bay of Islands, N. Zealand].
- Carbo leucogaster*, *Cassin (nec Vieill. nec Gould), U.S. Expl. Exped., Orn.* p. 372 (1858) [New Zealand].
- Graculus leucogaster*, *Finsch (nec Vieill., nec Gould), Ibis*, 1882, p. 402 [Bay of Islands, New Zealand].

**Adult.** Top of the head, back of the neck, lower back, rump, upper tail-coverts, and thighs brownish black, glossed with very dark green; upper back, wing-coverts, and scapulars bronze-grey, with a slight greenish gloss, each feather bordered with black, glossed with green; sides of the head, chin, throat, rest of neck, and underparts pure white; quills and tail brownish black. Tail composed of 12 feathers. Iris sea-green, a bright yellow spot on the bare space in front of the eye; naked skin round eye dark blue; gular sac yellow; bill dark horn or brownish yellow, paler at the tip and towards the base of the lower mandible; legs and feet black (*Buller*). Total length about 28 inches, culmen 2·5–2·6, wing 11·5–11·8, tail 5·5–5·6, tarsus 2·5, outer toe and claw 4.

**Younger examples** have the plumage of the upper parts browner, with less green gloss, the white feathers of the neck mixed with brown feathers, and most of the feathers of the breast and belly brown at the extremity, producing a mottled appearance.

**Hab.** New Zealand.

|                              |                                      |                                      |
|------------------------------|--------------------------------------|--------------------------------------|
| a. Ad. sk.                   | New Zealand.                         | Old Coll.                            |
| b. Ad. sk.                   | New Zealand.                         | New Zealand Co. [P.].                |
| c. Ad. sk.                   | New Zealand.                         | Colonial Museum,<br>Wellington [P.]. |
| d, e. Ad. st. et<br>imm. sk. | New Zealand.                         | Antarctic Exped. [P.].               |
| f, g. Ad. et vix<br>ad. sk.  | New Zealand.                         | Sir E. Home [P.].                    |
| h. Vix ad. sk.               | New Zealand.                         | Sir Samuel Scott<br>[P.].            |
| i. Ad. sk.                   | North Island, New Zealand.           | G. Carrick Stett, Esq.<br>[P.].      |
| k, l. Ad. sk.                | *Christchurch, South Island,<br>Feb. | Baron A. von Hügel<br>[P.].          |

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\* The smaller of these two birds has the general colour of the back, wing-coverts, and scapulars purplish black, with scarcely a trace of green gloss, and the lower back, rump, and upper tail-coverts black with almost no green gloss.



|               |                                         |                            |
|---------------|-----------------------------------------|----------------------------|
| m. Imm. sk.   | Fort Chalmers, South Island,<br>Feb.    | Baron A. von Hugel<br>[P.] |
| n. ♀ imm. sk. | Invercargill, South Island,<br>Dec. 26. | Baron A. von Hugel<br>[P.] |
| o. Skull.     | Hardy Bay, New Zealand.                 | 'Challenger' Exped.        |

30. *Phalacrocorax gouldi*. (Fig. 8.)

- Phalacrocorax leucogaster*, Gould (nec Vieill.), *P. Z. S.* 1837, p. 156 [N. S. Wales', *id. Syn. B. Austr.*, App. p. 7 (1838) (N. S. Wales', *id. B. Austr.* vii. pl. 69 (1843), *G. R. Gray, List of B.* pt iii. p. 187 (1844) Tasmania; *Gould, Handb. B. Austr.* ii. p. 492 (1865).  
*Graculus leucogaster*, *Reichenb. Natat. res.* pl. xxxv. figs. 875-6 (1850), *Schl. Mus. Pays-Bas*, vi. Plac. p. 20 (1863), *G. R. Gray, Handb. B.* iii. p. 128 (1871), *Ramsay, P. Linn. Soc. N. S. W.* ii. p. 203 (1877), *id. Tab. Last Austr. B.* p. 25 (1888), *North, Nests & Eggs Austr. B.* p. 366 (1889); *Le Souef, Ibis*, 1895, p. 421 [Albatros I., Bass Straits].  
*Hypoleucus leucogaster*, *Reichenb., Bonap. Consp. Av.* ii. p. 173 (1855).  
*Hypoleucus gouldi*, *Salvad. Orn. Pap.* iii. p. 413 (1882); *id. Ann. Mus. Civ. Genov.* xviii. p. 404 (1883) [Louisiane Archipelago].

Fig. 8.—*P. gouldi*.

*Adult in breeding-plumage.* Top of the head, back of the neck, middle of the upper back, lower back, rump, upper tail-coverts, and flanks black, glossed with dull steel-blue; sides of the upper back, scapulars, and wing-coverts glossed with dull oil-green, each feather narrowly bordered with black; sides of the head, chin, throat, and underparts pure white; quills and tail-feathers brownish black with some greenish gloss. The feathering is continued along the lower mandible for some distance beyond the commissure of the bill. Back of the neck ornamented with numerous white plumules, and there are a few scattered feathers of the same sort on the back and flanks. These are absent in the non breeding season. "Iris green; bill and feet black; naked skin at the base of the bill and round the eye purple" (*Gould*). Total length about 24 inches, culmen

1·85-2, wing 9·5-10·4, tail 3·7-4, tarsus 2·15, outer toe and claw 3·4.

*Hab.* East and South coasts of Australia; Tasmania; Louisiade Archipelago.

|             |                    |                    |
|-------------|--------------------|--------------------|
| a. Ad. sk.  | [South Australia.] | Gould Coll.        |
| b. Ad. sk.  | New South Wales.   | Australian Museum  |
|             |                    | [P.]               |
| c. Ad. sk.  | Tasmania.          | E. P. Ramsay, Esq. |
|             |                    | [P.]               |
| d. Imm. sk. | Lewis, Tasmania.   | Gould Coll.        |

### 31. *Phalacrocorax hypoleucus*. (Fig. 9.)

*Carbo hypoleucos*, Brandt, *Bull. Acad. St. Pétersb.* iii. p. 55 (1837).

*Phalacrocorax hypoleucus*, Gould, *B. Austr.* vii. pl. 68 (1843).

*Phalacrocorax varius*, Gould (nec Gmel.), *Handb. B. Austr.* ii. p. 490 (1865) [part, Australia]; Walker, *Ibis*, 1892, p. 258 [Adèle I., N.W. Australia].

*Graculus varius*, Finsch, *J. f. O.* 1870, p. 376; 1872, p. 258 (Great Barrier); G. R. Gray, *Hand-l. B.* iii. p. 128 (1871) [part]; Ramsay, *Tab. List Austr. B.* p. 24 (1888); North, *Nests & Eggs Austr. B.* p. 365 (1889).

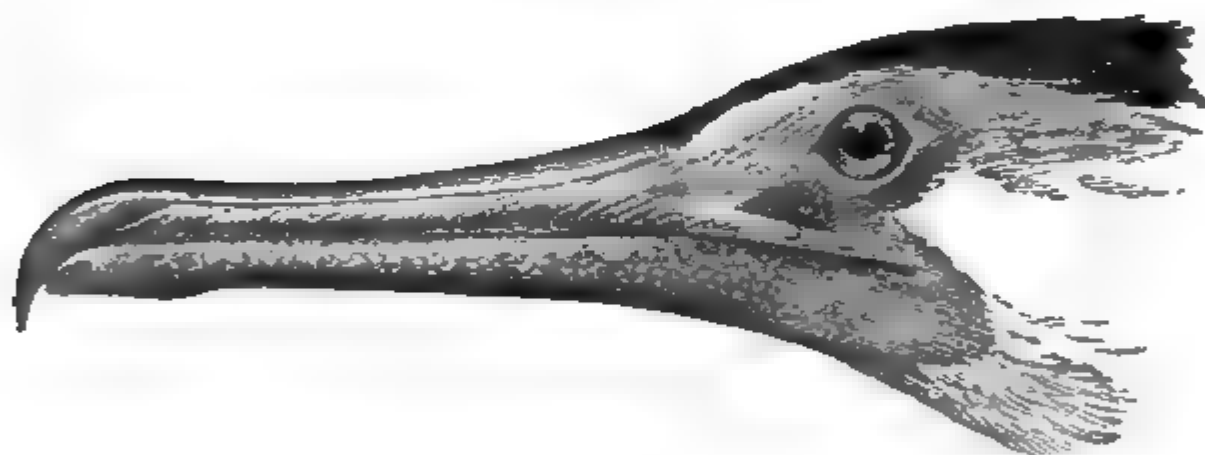


Fig 9.—*P. hypoleucus*.

*Adult.* Very similar to the adult of *P. gouldi*, but at once distinguished by its much longer bill and by the feathering on the throat, which is not continued along the lower mandible beyond the commissure. "Iris pale green; bare space in front of eye bright orange, eyelid and naked skin beneath the eye rich indigo-blue; throat and cheeks light bluish ash; bill dark horn-colour, lighter at the tip; legs and feet black" (Gould). Total length about 27 inches, culmen 2·7, wing 10·8, tail 4·7, tarsus 2·35, outer toe and claw 3·8.

*Hab.* West Australia.

|              |                                                                             |                               |
|--------------|-----------------------------------------------------------------------------|-------------------------------|
| a. ♀ ad. sk. | Freycinet's Harbour, Shark Bay,<br>W. Australia, April 10 (F M.<br>Rayner). | Voyage of H.M.S.<br>'Herald.' |
|--------------|-----------------------------------------------------------------------------|-------------------------------|

32. *Phalacrocorax melanoleucus*.

- Hydrocorax melanoleucus*, Vieill. *N. Dict. d'Hist. Nat.* viii. p. 88 (1817) [Australia].
- Phalacrocorax melanoleucus*, Steph. in *Shaw's Gen. Zool.* xiii. pt. i. p. 93 (1826); Gould, *B. Austr.* vii. pl. 70 (1843); G. R. Gray, *List of B.* pt. iii. p. 187 (1844); Macgill. *Voy. 'Rattlesnake,'* ii. p. 359 (1852) [Torres Straits]; Gould, *Handb. B. Austr.* ii. p. 493 (1865); Marie, *Act. Soc. Linn. Bord.* xxvi. p. 328 (1870) [New Caledonia]; Walden, *Tr. Z. S.* viii. p. 108 (1872); Buller, *B. N. Zeal.* p. 333 (1873); Legge, *P. R. S. Tasm.* 1874, p. 35; Ramsay, *P. Z. S.* 1877, p. 348 [N.E. Queensland]; id. *P. Linn. Soc. N. S. W.* iii. p. 302 (1878); Salvad. *Ann. Mus. Civ. Gen.* xiv. p. 669 (1879) [Kei]; Ramsay, *P. Linn. Soc. N. S. W.* iv. p. 102 (1880) [Pt. Moresby]; Buller, *Man. B. N. Zeal.* p. 94 (1882); id. *B. N. Zeal.* 2nd ed. ii. p. 173 (1883) [New Zealand, rare]; Hartert, *Nov. Zool.* iii. p. 598 (1896) [Lombok].
- Carbo dimidiatus*, Cuv., *Lesson, Traité d'Orn.* p. 604 (1831) [Australia]; Finsch, *New-Guin.* p. 183 (1865).
- Phalacrocorax flavirhynchus*, Gould, *P. Z. S.* 1837, p. 157 [N. S. Wales]; id. *Syn. B. Austr.*, App. p. 8 (1838) [East coast of N. S. Wales].
- Graucalus flavirostris*, G. R. Gray, in *Dieffenb. Trav. N. Zeal.* ii. App. p. 201 (1843).
- Phalacrocorax* sp., G. R. Gray, *List of B.* pt. iii. p. 188 (1844) [New Zealand].
- Graculus melanoleucus*, Reichenb. *Natatores*, pl. xxxv. figs. 872-3 (1850); G. R. Gray, *P. Z. S.* 1858, p. 198; id. *P. Z. S.* 1860, p. 368 [Batjan]; id. *Ibis*, 1862, p. 251 [New Zealand]; Schl. *Mus. Pays-Bas*, vi. *Pelec.* p. 16 (1863); G. R. Gray, *Hand-l. B.* iii. p. 129 (1871); v. *Pelz. Ibis*, 1873, p. 124; Finsch, *J. f. O.* 1874, p. 223; id. *Mus. Godeffr.* Heft viii. p. 48 (1875); Brugg *Abh. Ver. Bremen*, v. p. 99 (1876) [Celebes]; Ramsay, *P. Linn. Soc. N. S. W.* ii. p. 203 (1877); Lenz, *J. f. O.* 1877, p. 381 [Ceram]; Rosenb. *Malay. Arch.* p. 373 [Aru], p. 564 [New Guinea] (1878-9); id. *Alb. & Salvad. Ann. Mus. Civ. Genov.* xiv. p. 135 (1879) [Fly R.]; Nehr. *J. f. O.* 1879, p. 410 [egg]; Meyer, *Verh. Ges. Wien*, xxxi. p. 767 (1882) [Sumba]; Ramsay, *Tab. List Austr. B.* pp. 25, 38 (1888) [Lord Howe I.]; North, *Nests & Eggs Austr. B.* p. 306 (1889).
- Haliaeetus melanoleucus*, Bonap. *Consp. Av.* p. 177 (1855); Rosenb. *Nat. Tijdschr. Ned. Ind.* xxv. p. 255 (1863) [Ceram].
- Haliaeetus leucomelas*, Vieill. *vide Gloger, J. f. O.* 1857, p. 14.
- ? *Graculus hypoleucus*, G. R. Gray, *P. Z. S.* 1858, p. 198 [Louisade Arch.], 1861, p. 438 [Kei Is.].
- Carbo melanoleucus*, Hartl. & Finsch, *P. Z. S.* 1868, pp. 4, 9, 118, 1872, pp. 90, 114 [Pelew Is.].
- Microcarbo melanoleucus*, Salvad. *Ann. Mus. Civ. Genov.* vii. p. 796 (1875) [Halmahera]; id. *Orn. Pap.* iii. p. 410 (1882) [Sorong], *Agg.* p. 211 (1891); id. *Ann. Mus. Civ. Genov.* xviii. p. 403 (1883) [New Guinea, Salawatti, Aru, Kei, Moluccas, Ceram, Amboina, Halmahera, Ternate, Celebes, Timor, Sumba]; Pleske, *Bull. Acad. St. Pétersb.* xxix. p. 539 (1884) [Ternate]; Guillem. *P. Z. S.* 1885, p. 665 [Mysol, Waigiou]; Blasius, *Zeit. ges. Orn.* iii. p. 173 (1886) [Celebes]; Salvad. *Ann. Mus. Civ. Genov.* (2) ix. p. 591 (1890) [Rigo].
- ? *Phalacrocorax leucogaster*, Sharpe (nec Vieill.), *J. Linn. Soc.* xiii. p. 505 (1878) [Port Moresby].

*Graculus dimidiatus*, *Rosenb. Malay. Arch.* p. 279 (1878-9) [Celebes].  
*Carbo melanurus*, *Bernst. Dagboek*, p. 119 (1883) [Sorong].  
*Graculus (Melanocarbo) melanoleucus*, *Bernst. Dagboek*, p. 119 (1883) [Sorong].

*Adult in breeding-plumage.* Crown, nape, back of the neck, and upper parts shining black, with a dull greenish gloss; remainder of plumage white, except the vent and under tail-coverts, which are sooty black; feathers at the base of the culmen white; wing-coverts and scapulars shining greyish black, margined with black; feathers on the forehead forming a short crest, the longest of which are less than an inch long; the white feathers on the sides of the head and neck considerably lengthened and forming a kind of mane on each side of the neck; black feathers on the top of the head and neck ornamented with scattered narrow white plumes. Tail composed of 12 feathers. Iris dark brown; bill yellow, except the culmen, which is dark horn-colour; lores and skin round eye dull olive; throat yellow; legs and feet black. Total length in flesh 23 inches, culmen 1·2, wing 8·8-9, tail 5·8-6, tarsus 1·45, outer toe and claw 2·8.

*Adult in non-breeding plumage.* The black feathers of the crest and white feathers forming the lateral manes are much shorter, and the narrow white feathers on the top of the head and back of the neck are absent.

*A young example* has the black feathers of the crown extending to the base of the culmen; the top of the head and back of the neck margined with pale brown, and the upper back, wing-coverts, and scapulars with brownish white; the feathers of the underparts, especially those of the chest and breast, yellowish brown towards the extremity.

*Hab.* Coasts and rivers of Australia, ranging east to New Zealand and New Caledonia, north to New Guinea, the Moluccas, and Pelew Islands, west to Lombok.

|                                      |                                                                 |                                  |
|--------------------------------------|-----------------------------------------------------------------|----------------------------------|
| <i>a.</i> Ad. sk.                    | Pelew Islands.                                                  | Mr. Cohen [C.].                  |
| <i>b.</i> Ad. sk.                    | Celebes.                                                        | Tweeddale Coll.                  |
| <i>c.</i> Ad. st.                    | Celebes.                                                        | Leiden Museum [P.].              |
| <i>d.</i> Imm. sk.                   | Halmahera.                                                      | A. R. Wallace, Esq. [C.].        |
| <i>e.</i> ♀ imm. sk.                 | Batjan.                                                         | A. R. Wallace, Esq. [C.].        |
| <i>f.</i> ♀ ad. sk.                  | Ceram.                                                          | A. R. Wallace, Esq. [C.].        |
| <i>g.</i> Ad. sk.                    | Australia.                                                      | Purchased.                       |
| <i>h.</i> Vix ad. sk.                | W. Australia.                                                   | Governor of West Australia [P.]. |
| <i>i, k.</i> ♂ vix ad. et ♀ imm. sk. | Fitzroy River, North-west Australia, Oct. (T. H. Bowyer Bower). | Capt. Bowyer Bower [P.].         |
| <i>l.</i> ♂ ad. sk.                  | Gulf of Carpentaria, lat. 17° 30', long. 142°, Sept. 18.        | J. R. Elsey, Esq. [P.].          |
| <i>m.</i> ♀ imm. sk.                 | Horn Island, Torres Straits, Sept. (Dr. Coppinger).             | Voyage of H.M.S. 'Alert.'        |

|                       |                                  |                        |
|-----------------------|----------------------------------|------------------------|
| n-p. Imm. sk.         | Cape York, North-east Australia. | Salvin-Godman Coll.    |
| q. Ad. sk.            | Port Denison, Queensland.        | Old Coll.              |
| r. ♂ imm. sk.         | Moreton Bay.                     | E. Hargitt, Esq. [P.]  |
| s, t. Ad. et imm. sk. | New South Wales.                 | Australian Museum [P.] |
| u. Imm. sk.           | Murray District, Victoria.       | Sir G. Grey [P.]       |

### 33. *Phalacrocorax brevirostris*.

*Phalacrocorax brevirostris*, Gould, *P. Z. S.* 1837, p. 26; *G. R. Gray, List of B.* pt. iii. p. 188 (1844); *Buller, B. N. Zeal.* p. 330, pl. right-hand fig. (1873); *Hutton, Ibis*, 1874, p. 42; *Buller, Ibis*, 1874, p. 121 [Chatham Is.]; *id. Man. B. N. Zeal.* p. 94, pl. xxxiv. fig. 2 (1882); *id. B. N. Zeal.* 2nd ed. ii. p. 168 (1888).

*Graculus brevirostris*, *G. R. Gray, Voy. Erebus & Terror, Birds*, p. 20 (1845); *Reichenb. Syn. Av.* pl. xxxii.<sup>b</sup> fig. 2308 (1850); *G. R. Gray, Ibis*, 1862, p. 252 [Bay of Islands]; *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 16 (1863); *G. R. Gray, Hand-l. B.* iii. p. 129 (1871); *Finsch, J. f. O.* 1870, p. 377 [Avon R.], 1872, p. 259; *id. J. f. O.* 1874, pp. 174, 216.

*Graculus melanoleucus*, *G. R. Gray (nec Vieill.), Voy. Erebus & Terror, Birds*, p. 20 (1845).

*Carbo flavagula*, *Peale, Zool. Expl. Exped., Birds*, p. 270 (1848).

*Halieus brevirostris*, *Bonap. Consp. Av.* p. 178 (1855).

*Carbo brevirostris*, *Cassin, U.S. Expl. Exped., Orn.* p. 375 (1858).

*Pelecanus carboides*, *Ellman, Zool.* 1861, p. 7472.

*Phalacrocorax finschi*, *Sharpe, Voy. Erebus & Terror, Birds, App.* p. 34 (1875) [partial albino]; *Buller, Man. B. N. Zeal.* p. 95 (1882).

*Adult in breeding-plumage.* Entire plumage glossy black, with a slight greenish tinge on the upper parts and sides of the body; the line of feathers from the nostril to the eye, sides of the head, chin, throat, and fore part of the neck pure white; wing-coverts and scapulars shining greyish black, margined with deep black; a crest of rather stiff elongate feathers on the crown, the longest measuring about 1·5 inch; a few scattered white plumules on the back of the head and neck. Tail composed of 12 feathers. Iris deep chocolate-brown; naked skin in front of the eye and bordering the pouch greenish yellow; bill bright yellow, changing into black on the ridge and towards the hook; legs and feet black (*Buller*). Total length about 22 inches, culmen 1·1, wing 8·6-9, tail 6, tarsus 1·4, outer toe and claw 2·7.

*Adult in non-breeding plumage.* Only differs in having the feathers of the crest shorter and the white plumules absent.

*Young in first plumage* has the upper parts much like those of the adult, but with a general brownish tinge; the head, neck, and underparts very dark brownish black, paler on the chin and throat.

*A rather older specimen* is rapidly attaining a white throat, the chin and many of the feathers of the throat being white, while the tips of the feathers of the fore-neck and chest are pale brown; this appears to be due to wear.

*In a still older bird* the chin and throat are white and the fore part of the neck, chest, and breast are largely mixed with pale whitish brown.

*A fourth example*, which appears to be still older, has the chin and the whole of the throat pure white, while the feathers of the rest of the underparts are dirty white, fringed and centred with dark brown.

*A nearly adult bird* differs from the adult in non-breeding plumage in having the feathers of the neck, breast, and back narrowly margined with whitish brown.

The above stages of plumage I believe to be those which are normally gone through by *P. brevirostris*, but there are a number of differently marked forms in both adult and immature plumage which appear to be abnormal. One example in the British Museum, as already described by Buller, has the underparts nearly pure white, only a few of the feathers being partially or wholly black; a second has the black and white feathers of the underparts mixed in equal proportions; a third has only the chest-feathers mixed with white, while in a fourth the plumage is normal, but there are a few white feathers on the lower part of the abdomen.

It is quite clear that these variations in plumage are not due to season, sex, or age, and they may be accounted for in two ways—partial albinism, or, possibly, by interbreeding with stray specimens of the Australian *P. melanoleucus*. It is certain that *P. melanoleucus* does occasionally wander to New Zealand, for there is an immature specimen obtained there in the Rothschild Museum. I am not aware that any example of *P. brevirostris* has up to the present time been met with in Australia.

It seems probable that the two specimens in the British Museum which have been referred by Dr. Sharpe to a distinct species, *P. finschi*, are merely partial albino varieties of *P. brevirostris* (cf. Buller, 'Birds of New Zealand,' ed. 2, ii. p. 169). It should, however, be noted that in both specimens the vent and under tail-coverts are white, but in the type one or two black feathers are to be found next the tail.

*Hab.* New Zealand and Chatham Islands.

|                                       |                                               |                                       |
|---------------------------------------|-----------------------------------------------|---------------------------------------|
| a. Ad. st.                            | New Zealand.                                  | Sir George Grey [P.].                 |
| b. Ad. sk.                            | New Zealand.                                  | Percy Earl, Esq. [C.].                |
| c, d. Ad. et vix<br>ad. sk. [var.].   | New Zealand.                                  | Colonial Museum,<br>Wellington [P.].  |
| e. Ad. sk.                            | New Zealand.                                  | Antarctic Exped. [P.].                |
| f. Ad. sk. [var.].                    | New Zealand.                                  | Antarctic Exped. [P.].                |
|                                       |                                               | (Type of <i>P. finschi</i> , Sharpe.) |
| g, h. Vix ad. et<br>imm. sk.          | New Zealand.                                  | Sir Samuel Scott<br>[P.].             |
| i, k. Imm. sk.                        | New Zealand.                                  | Capt. Stokes [P.].                    |
| l. Ad. sk.                            | Taranaki, N. Island,<br>New Zealand.          | Purchased.                            |
| m-o. Ad. et ♀<br>imm. sk.             | Christchurch, S. Island,<br>New Zealand, Feb. | Baron A. von Hügel<br>[P.].           |
| p-r. ♂ ♀ ad. et<br>♂ imm. sk. [var.]. | Dunedin, Nov.                                 | Baron A. von Hügel<br>[P.].           |
| s. Imm. sk.                           | The Bluff, Southland,<br>New Zealand.         | Baron A. von Hügel<br>[P.].           |

34. *Phalacrocorax javanicus*.

- ? *Hydrocorax niger*\*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 88 (1817) [India].
- ? *Pelecanus niger*, *Vieill. Tabl. Encycl. Méth.* i. p. 342 (1820).
- Carbo javanicus*, *Horsf. Tr. Linn. Soc.* xiii. p. 197 (1822) [Java].
- Javan Corvorant, *Lath. Gen. Hist. B.* x. p. 419 (1824).
- Phalacrocorax javanicus*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 90 (1826); *Sykes, P. Z. S.* 1832, p. 170 [Deccan].
- Carbo africanus*, *Lesson (nec Gmel.) Traité d'Orn.* p. 604 (1831) [part male]; *Fucheran, Rev. et Mag. Zool.* 1850, p. 626 [Bengal].
- Carbo pygmeus* (sic), *J. E. Gray, Ill. Ind. Zool.* ii. pl. 56 (1834).
- Carbo melanognathos*, *Brandt, Bull. Acad. St. Pétersb.* iii. p. 57 (1837).
- Carbo nudigula*, *Brandt, Bull. Acad. St. Pétersb.* vi. p. 290 (1839) [India].
- Carbo pygmæus*, *Hodgs. (nec Gmel.) Icon. ined.* no. 552; *id. in Gray's Zool. Misc.* p. 86 (1844).
- Phalacrocorax pygmæus*, *G. R. Gray (nec Gmel.) List of B.* pt. iii. p. 188 (1844); *Davidson & Wenden, Str. F.* vii. p. 94 (1878) [Deccan]; *Ball, Str. F.* vii. p. 234 (1878) [Ganges to Godavari]; *Cripps, Str. F.* vii. p. 315 (1878) [Faridpur]; *Hume & Davison, Str. F.* vi. pp. 496, 521 (1878) [Tenasserim]; *Auders. B. W. Yunnan*, p. 607 (1878) [part]; *Doig, Str. F.* viii. p. 372 (1879) [E. Narra: breeding]; *Butl. Cat. B. Sind*, p. 82 (1879); *id. Str. F.* ix. p. 442 (1880); *Vidal, Str. F.* ix. p. 96 (1880) [S. Konkan]; *Legge, B. Ceylon*, iii. p. 1191 (1880) [part]; *Reid, Str. F.* x. p. 88 (1881) [Lucknow]; *Oates, Str. F.* x. p. 246 (1882) (Pegu); *Davidson, Str. F.* x. p. 327 (1882) [Khandeish]; *Oates, B. Burmah*, ii. p. 234 (1883); *Parker, Ibis*, 1883, p. 194 [breeding in S. Ceylon]; *Davison, Str. F.* x. p. 419 (1883) [Mysore and Wynaad]; *Swinh. & Barnes, Ibis*, 1885, p. 138 [Central India]; *Oates, Ibis*, 1888, p. 73 [Bhamo]; *Hume, Str. F.* xi. p. 352 (1888) [Manipur]; *Hartert, J. f. O.* 1889, p. 407 [Salanga]; *Oates, ed Hume's Nests & Eggs*, iii. p. 273 (1890); *Munn, Ibis*, 1894, p. 71 [Calcutta Dist.].
- Graculus pygmæus*, *G. R. Gray (nec Gmel.) Cat. Hodgs.* ed i. p. 149 (1846); *Blyth, Cat. Mus. As. Soc.* p. 200 (1849); *Layard, Ann. Mag. N. H.* xiv. p. 272 (1854) [Ceylon]; *Adams, P. Z. S.* 1858, p. 509 [Punjab]; *Irby, Ibis*, 1861, p. 247 [Oudh and Kumaon]; *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 13 (1863) [part]; *Heugl. Orn. N.O.-Afr.* iii. p. 1491 (1873) [part]; *Blyth & Wald. Cat. Mamm. & B. Burma*, p. 164 (1875); *Fairb. Str. F.* iv. p. 264 (1876) [Deccan]; *Hume & Inglis, Str. F.* v. p. 47 (1877) [Cachar]; *Oates, Str. F.* v. p. 170 (1877) [Pegu: breeding].
- Graculus pygmæus indicus*, *Reichenb. Natatores*, pl. xxxi.\* fig. 2304 (1850).
- Graculus javanicus*, *Reichenb. Natatores*, pl. xxxiv. figs. 869-70, pl. xxxi.\* fig. 2307 (1850); *Jerd. B. Ind.* ii. pt. ii. p. 863 (1864); *Blyth, Ibis*, 1867, p. 181; *Holdsw. P. Z. S.* 1872, p. 483 [Ceylon]; *Butler, Str. F.* iv. p. 34 (1876) [Mt. Aboo]; *Marshall, Ibis*, 1884, p. 425 [Chamba].
- Microcarbo melanognathus*, *Bonap. Consp. Av.* ii. p. 179 (1855); *Ball, Str. F.* ii. p. 440 (1874) [Chota Nagpur].
- Microcarbo javanicus*, *Bonap. Consp. Av.* ii. p. 179 (1855).

\* Vieillot probably referred to this species, but the brief description might equally apply to *P. fuscicollis* — "Il a le bec rougeâtre, le plumage totalement d'un beau noir, et la taille de notre *Sarcelle*."



*Microcarbo niger*, Bonap. *Consp. Av.* ii. p. 180 (1855).

*Graculus melanognathus*, G. R. Gray, *Hand-l. B.* iii. p. 129 (1871);  
*Hume, Nests & Eggs Ind. B.* p. 660 (1873); *id. Str. F.* i. p. 289  
 (1873) [Sind]; *Adam, Str. F.* i. p. 403 (1873) [Sambhur Lake];  
*Hume, Str. F.* ii. p. 484 (1874) [Tenasserim]; *Lloyd, Ibis*, 1876,  
 p. 280 [Kattiawar].

*Microcarbo pygmæus*, *Salvad. Ucc. Born.* p. 366 (1874); *Everett,*  
*Str. Br. As. Soc. Beng.* no. xx. p. 188 (1889) [Borneo].

*Phalacrocorax melanognathus*, *Butler, Str. F.* vii. p. 190 (1878)  
 [Sind].

*Adult in breeding-plumage.* General colour shining black with a slight greenish gloss; feathers of the upper back with shining black shafts; the scapulars and wing-coverts silvery grey changing to dark ashy-grey, each feather much pointed and bordered with black; a line of scattered white plumes, commencing above and in front of the eye and continued along the sides of the head; top of the head and back of the neck with white hair-like filaments; the black feathers on the occiput and back of the neck considerably elongate and forming a kind of mane. Tail composed of 12 feathers. Bill brown, livid purple in the breeding-season; naked skin round eyes and on throat as well as the legs blackish, livid in summer. Total length about 22 inches, culmen 1.15–1.25, wing 7.5–8, tail 5.2–5.4, tarsus 1.35, outer toe and claw 2.35.

*Adult in non-breeding plumage.* Similar to the above, but the feathers bordering the naked gular patch are white, the white filaments on the head and neck are absent, and the feathers on the occiput and back of the neck are much less elongate than in the breeding bird.

In worn specimens the silvery grey on the scapulars and wing-coverts nearly disappears, and the feathers are of a uniform blackish-grey tint.

*Nestling.* Head naked; neck, middle of upper back, lower back, and underparts covered with very dark smoky-brown down; wing-coverts and scapulars dark grey, margined with black; half-grown quills pointed and narrowly margined with brownish white; a line of feathers down the middle of the lower back black, with a slight dark greenish gloss; a similar line down the middle of the breast deep brownish black with a slight gloss.

*Immature in first plumage.* Head, neck, and underparts dark brown, darkest on the back of the neck and flanks; chin and throat whitish; lower back, rump, and upper tail-coverts brownish black with a slight gloss; scapulars and wing-coverts dark ashy-grey, much like those of the adult, but very narrowly fringed with pale brownish.

*Hab.* India, Ceylon, and the Indo-Burmese countries, southward through the Malay Peninsula to Java and Borneo.

|               |                                                 |            |
|---------------|-------------------------------------------------|------------|
| a. Imm. sk.   | Rohri Dist., North Sind, Nov. 19<br>(A. O. H.). | Hume Coll. |
| b. ♂ imm. sk. | Mado Mehur, N. Sind, Jan. 20<br>(A. O. H.).     | Hume Coll. |
| c. ♀ imm. sk. | Manchar Lake.                                   | Hume Coll. |

|                                    |                                                        |                                |
|------------------------------------|--------------------------------------------------------|--------------------------------|
| <i>d.</i> Imm. sk.                 | Ghizni Creek, Karachi ( <i>H. Gould</i> ).             | India Museum [P.].             |
| <i>e.</i> ♀ ad. sk.                | Mt. Abu, June 18.                                      | Hume Coll.                     |
| <i>f.</i> Ad. sk.                  | Depalpur, near Mhow, Dec. 11.                          | Colonel Swinhoe [P.].          |
| <i>g.</i> ♂ imm. sk.               | Pimpalner, Khandeish, Feb. 7 ( <i>J. Davidson</i> ).   | Hume Coll.                     |
| <i>h, i.</i> Ad. et imm. sk.       | Deccan ( <i>Sykes</i> ).                               | India Museum [P.].             |
| <i>k.</i> ♂ imm. sk.               | Khandala, April 23 ( <i>S. B. Fairbank</i> ).          | Tweeddale Coll.                |
| <i>l.</i> ♀ imm. sk.               | North-east Ceylon, April 20.                           | Colonel W. V. Legge [P.].      |
| <i>m.</i> ♀ ad. sk.                | Trincomali, Oct. ( <i>G. Stevens</i> ).                | H. Saunders, Esq. [P.].        |
| <i>n.</i> ♂ ad. sk.                | Battikaloa, Feb. 19 ( <i>S. Chapman</i> ).             | Tweeddale Coll.                |
| <i>o.</i> Ad. sk.                  | Madras.                                                | India Museum [P.].             |
| <i>p, q.</i> ♂ ad. et ♀ imm. sk.   | Madras.                                                | Hume Coll.                     |
| <i>r.</i> ♀ imm. sk.               | Sambalpur, Central Provinces, Jan. 7.                  | Hume Coll.                     |
| <i>s.</i> Ad. sk.                  | Raipur.                                                | Hume Coll.                     |
| <i>t.</i> ♂ imm. sk.               | Raipur, Feb. 8.                                        | Hume Coll.                     |
| <i>u.</i> Imm. sk.                 | Kampti.                                                | Dr. R. B. Hinde [P.].          |
| <i>v, w.</i> ♂ ♀ imm. sk.          | Seoni.                                                 | Hume Coll.                     |
| <i>x.</i> Ad. sk.                  | Bengal ( <i>Dr. Falconer</i> ).                        | India Museum [P.].             |
| <i>y.</i> Pull. sk.                | Bengal.                                                | India Museum [P.].             |
| <i>z-b'.</i> ♂ ♀ imm. sk.          | North-West Provinces.                                  | Capt. Stackhouse Pinwill [P.]. |
| <i>c'.</i> Imm. sk.                | Sirsa Dist. (cold season)                              | Hume Coll.                     |
| <i>d', e'.</i> Imm. sk.            | Etawah.                                                | Hume Coll.                     |
| <i>f'-i'.</i> Vix ad. et imm. sk.  | Nepal.                                                 | B. H. Hodgson, Esq. [P.].      |
| <i>k', l'.</i> Vix ad. et imm. sk. | Nepal ( <i>B. H. Hodgson</i> ).                        | India Museum [P.].             |
| <i>m', n'.</i> Ad. et vix ad. sk.  | Behar.                                                 | B. H. Hodgson, Esq. [P.].      |
| <i>o'-t'.</i> Ad. et imm. sk.      | Bhotan Doars, Jan. March & May ( <i>L. Mandelli</i> ). | Hume Coll.                     |
| <i>u'.</i> Imm. sk.                | Bhotan Doars ( <i>F. W. Monteiro</i> ).                | India Museum [P.].             |
| <i>v', w'.</i> Vix ad. sk.         | Buxa Doars, Jan. ( <i>L. M.</i> ).                     | Hume Coll.                     |
| <i>x'.</i> Imm. sk.                | Calcutta, Feb. ( <i>J. Buddulph</i> ).                 | Tweeddale Coll.                |
| <i>y'.</i> Imm. sk.                | North-east India.                                      | Tweeddale Coll.                |
| <i>z'.</i> Imm. sk.                | Assam.                                                 | Tweeddale Coll.                |
| <i>a².</i> Imm. sk.                | Upper Assam.                                           | Dr. R. Bowdler Sharpe [P.].    |
| <i>b².</i> ♂ imm. sk.              | Dibrughur, April 6 ( <i>J. R. Cripps</i> ).            | Hume Coll.                     |
| <i>c².</i> Ad. sk.                 | Chataka, Hills of Assam.                               | Godwin-Austen Coll.            |
| <i>d², e².</i> ♂ ♀ vix ad. sk.     | North Khasia Hills, Feb. ( <i>A. W. Chennell</i> ).    | Tweeddale Coll.                |
| <i>f².</i> ♀ imm. sk.              | Tengapani, Assam, April.                               | Godwin-Austen Coll.            |
| <i>g².</i> Imm. sk.                | Oachar.                                                | Hume Coll.                     |

|                                 |                                                 |                                      |
|---------------------------------|-------------------------------------------------|--------------------------------------|
| $k^2, l^2$ . ♂ ad. et imm. sk.  | Manipur, Feb., March (A. O. H.).                | Hume Coll.                           |
| $k^2$ . ♀ imm. sk.              | Arrakan, Jan.                                   | Hume Coll.                           |
| $l^2$ . Ad. sk.                 | Mungla, Sanda Valley, 3000 ft., Yunan, May.     | Dr. J. Anderson [C.].                |
| $m^2$ . ♀ imm. sk.              | Sittang River, April 15 (R. G. Wardlaw Ramsay). | Tweeddale Coll.                      |
| $n^2-q^2$ . ♂ ad. et ♀ imm. sk. | Toungthoo, May, Dec. (R. G. W. R.).             | Tweeddale Coll.                      |
| $r^2$ . ♀ ad. sk.               | Pegu, Dec. 23 (R. G. W. R.).                    | Tweeddale Coll.                      |
| $s^2, t^2$ . ♀ ad. et imm. sk.  | Pegu, Oct.                                      | E. W. Oates, Esq. [C.].              |
| $u^2$ . Imm. sk.                | Near Rangoon.                                   | Hume Coll.                           |
| $v^2$ . ♂ ad. sk.               | Moulmein, Salween R., Jan. 27 (W. Davison).     | Hume Coll.                           |
| $w^2$ . ♀ ad. sk.               | Thatone, Jan. 27 (W. D.).                       | Hume Coll.                           |
| $x^2$ . Ad. sk.                 | Salween River, Dec. 29 (W. Limborg).            | Tweeddale Coll.                      |
| $y^2$ . ♂ vix ad. sk.           | Assoun, Haungtharaw R., Feb. 3 (W. L.).         | Tweeddale Coll.                      |
| $z^2$ . ♂ vix ad. sk.           | Yeaboo, Attaran River, March 10 (W. D.).        | Hume Coll.                           |
| $a^2$ . ♀ imm. sk.              | Amherst, March 8 (W. D.).                       | Hume Coll.                           |
| $b^2$ . ♀ imm. sk.              | Tavoy, March 19 (W. D.).                        | Hume Coll.                           |
| $c^2$ . Imm. sk.                | Tahkamen, Siam, March 23 (S. S. Flower).        | Bangkok Museum [E.].                 |
| $d^2$ . Ad. sk.                 | Java.                                           | Tweeddale Coll.                      |
| $e^2$ . Ad. sk.                 | Java.                                           | East India Co. [P.].                 |
| $f^2$ . ♀ imm. sk.              | Java.                                           | (Type of the species.) Seebohm Coll. |
| $g^2$ . Imm. sk.                | West Java.                                      | A. R. Wallace, Esq. [C.].            |
| $h^2, i^2$ . Skulls.            | Nepal.                                          | B. H. Hodgson, Esq. [P.].            |

35. *Phalacrocorax pygmæus*.

Dwarf Shag, Latham, *Gen. Syn.* iii. pt. ii. p. 607 (1785) [Caspian Sea]; *id.* *Gen. Hist. B.* x. p. 431 (1824).

*Pelecanus pygmæus*, Gmel. *S. N.* i. pt. ii. p. 574 (1788); *Lath. Ind. Orn.* ii. p. 890 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 44, pl. xiv. fig. 3 (1790).

*Phalacrocorax pygmæus*, Pallas, *Zoogr. Rosso-As.* ii. p. 300, pl. lxxiv. fig. 1 (1811); Dumont, in *Levrault's Dict. Sci. Nat.* x. p. 452 (1818); Steph. in *Shaw's Gen. Zool.* xiii. pt. i. p. 97 (1826); Nutt. *Man. Orn.* p. 487 (1834) [United States!]; *Keys. u. Blas. Wirbelth.* p. 233 (1840); *Démid. Voy. Russ. Mérid.* iii. p. 303 (1840); Mühle, *Beitr. Orn. Griechenl.* p. 131 (1844); Rüpp. *Vög. N.O.-Afr.* p. 140 (1845) [Egypt, Abyssinia]; *Degl. Orn. Europ.* ii. p. 380 (1849); Brehm, *Vogelfang*, p. 361 (1855); Heugl. *Vög. N.O.-Afr.* p. 72 (1856); Linderm. *Vög. Griechenl.* p. 167 (1860); Tristram, *P. Z. S.* 1864, p. 455 [Palestine]; Filippi, *Viagg. Pers.* i. p. 352 (1865); Bolle, *J. f. O.* 1865, p. 421 [Sardinia]; *Degl. & Gerbe, Orn. Europ.* ii. p. 356 (1867); Tristram, *Ibis*, 1868, p. 331 [Palestine]; Elwes & Buckley, *Ibis*, 1870, p. 336 [Macedonia, Danube]; Homeyer, *J. f. O.* 1870, p. 231 [N. Germany]; Fritsch, *Nat. Vög. Europa's*, p. 452 (1870), *Atl.* pl. 53. figs. 2, 3 (1871);

- Shelley, B. Egypt*, p. 295 (1872); *Brooke, Ibis*, 1873, p. 345 [Sardinia]; *Tacz. J. f. O.* 1876, p. 189 [Ussuri]; *Dresser, Ibis*, 1876, p. 414; *id. B. Europe*, vi. p. 173, pl. 391 (1876) [part.]; *Blanf. E. Pers.* ii. p. 298 (1876); *Bogd. B. Caucas.* p. 182 (1879); *Tristram, P. Z. S.* 1881, p. 826 [Lake of Antioch]; *Seebohm, Ibis*, 1883, p. 36 [Caspian]; *Radde, Orn. Caucas.* p. 469 (1884); *Alléon, Ornus*, ii. p. 425 (1886) [Danube]; *Radde u. Walt. Ornus*, v. p. 124 (1889) [Transcaspia]; *Sclater, Ibis*, 1894, p. 107 [Württemberg]; *Reiser, Orn. Balcanica*, ii. p. 193 (1894), iv. p. 143 (1896); *Sclater, Ibis*, 1895, p. 169 [Zurich].
- Hydrocorax pygmæus*, *Vicill. N. Dict. d'Hist. Nat.* viii. p. 88 (1817).
- Carbo pygmæus*, *Temm. Man. d'Orn.* ii. p. 901 (1820), iv. p. 568 (1840); *Meyer & Wolf, Taaschenb.* iii. p. 235 (1822); *Warner, Atl. Ois. d'Eur. Ord.* 15. pl. 90 (1828); *Gould, B. Eur.* v. pl. 409 (1837); *Cara, Orn. Sard.* p. 200 (1842); *Bree, B. Eur.* iv. p. 176, pl. (1867); *Severtz. Turkest. Jevotnic*, p. 70 (1873); *id. Zeit ges. Orn.* iv. p. 21 (1888); *Tchusi u. Dalla Torre, Ornus*, vi. p. 267 (1890) [Hungary].
- Haliæus pygmæus*, *Licht. Verz. Doubl.* p. 86 (1823); *Naum. Nat. Vög. Deutschl.* xi. p. 112, pl. 281 (1842); *Fischer, J. f. O.* 1872, p. 390 [St. Petersburg; very rare].
- Graculus pygmæus*, *Reichenb. Natatores*, pl. xxxii. figs. 856-859 (1850); *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 18 (1863) [part.]; *Gray, Hand-l. B.* iii. p. 129 (1871); *Danf. & Brown, Ibis*, 1876, p. 431 [Transylvania].
- Graculus pygmæus algeriensis*, *Reichenb. Natatores*, pl. xxxii.<sup>b</sup> figs. 2905-6 (1850).
- Carbo niepcii*, *Mall. Orn. Alg.* p. 38 (1855).
- Microcarbo pygmæus*, *Bonap. Consp. Av.* ii. p. 179 (1855); *Gigl. Avif. Ital.* p. 273 (1886); *Salvad. Ucc. Ital.* p. 271 (1886); *Meyer, Vog.-Skelet.* pt. xii. pl. cxiii. (1888-89).
- Phalacrocorax pumilio*, *Licht. fide Bonap. Consp. Av.* ii. p. 180 (1857).
- Haliaetus (sic) pygmæus*, *Tacz. Bull. Soc. Zool. Fr.* 1877, p. 163 [Poland]; *id. Ornus*, iv. p. 504 (1888) [Poland, very rare].
- Phalacrocorax javanicus*, *Sharpe (nec Horesf.), Tr. Linn. Soc.* (2) v. pt. 3, p. 92 (1889) [Bala Morghab].

*Adult in breeding-plumage.* Forehead, lores, feathers surrounding the eye and naked throat black; rest of head deep reddish brown, gradually becoming paler on the occiput and upper part of the neck; lower part of the neck and remainder of the plumage shining black, with a slight greenish gloss most conspicuous on the underparts; scapulars and wing-coverts dark grey, each feather margined with black. Head, neck, back, rump, and entire underparts with scattered white plumules. Tail composed of 12 feathers. Iris green; bill, naked skin round eyes and on throat black; feet blackish grey. Total length about 22 inches, culmen 1.1, wing 7.8-8, tail 5.5, tarsus 1.4, outer toe and claw 2.6-2.7.

*Adult in non-breeding plumage.* Chin and feathers surrounding the bare throat white; forehead, lores, feathers round the eye, as well as the head, neck, and chest reddish brown; feathers of the upper back narrowly edged with whitish brown.

*Nestling.* Fore part of head, chin and throat naked; rest of the head and neck, sides of the belly and vent covered with very dark smoky-brown down; chest, breast, and underparts brown, mottled

with darker brown; back, rump, upper tail-coverts, and sides of the breast black with some greenish gloss; wing-coverts and scapulars shining grey in some lights, changing to black glossed with dark green, each feather being bordered with black.

*Immature in autumn plumage.* Head and neck reddish brown, shading into white on the chin and feathers bordering the throat, and into lighter brown on the fore part of the neck and chest; back and rump mostly black, each feather with a narrow sandy margin; wing-coverts and scapulars grey, devoid of metallic gloss, each feather margined with black and fringed externally with sandy; underparts dirty white, more or less mottled with brown and shading into black on the sides, flanks, and under tail-coverts.

*Hab.* Coasts, lakes, and rivers of Central and South Europe, North Africa, and South-west and Central Asia; apparently straggling as far north as Poland in the West and the Ussuri in the East.

|                       |                                              |                            |
|-----------------------|----------------------------------------------|----------------------------|
| a. ♂ ad. sk.          | Algiers.                                     | Purchased.                 |
| b, c. Ad sk.          | Ghuelma, Tunis.                              | Purchased.                 |
| d. Pull. sk.          | Banat Dist., Hungary, June.                  | Baron A. von Hügel [P.].   |
| e, f. ♂ ♀ vix ad. sk. | Adalia, Asia Minor, Dec. 22 (C. G. Danford). | Seebohm Coll.              |
| g. Imm. sk.           | Bagdad.                                      | Kenneth Loftus, Esq. [P.]. |
| h, i. ♂ ♀ imm. sk.    | River Tigris (Commander Jones).              | India Museum [P.].         |
| k, l. ♀ imm. sk.      | Bala Morghab, Afghanistan, Jan. & Dec.       | Dr. Aitchison [C.].        |

### 36. *Phalacrocorax africanus*.

African Shag, *Latham, Gen. Syn.* iii. pt. ii. p. 606 (1785); *id. Gen. Hist. B.* x. p. 420 (1824).

*Pelecanus africanus*, *Gmel. S. N.* i. pt. ii. p. 577 (1788); *Lath. Ind. Orn.* ii. p. 890 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 51 (1790).

*Hydrocorax africanus*, *Vieill. N. Dict. d'Hist. Nat.* viii. p. 88 (1817).

*Phalacrocorax africanus*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 85 (1826); *Nutt. Man. Orn.* p. 488 (1834) [United States!]; *Hartl. Beitr. Orn. W.-Afr.* p. 44 (1844); *G. R. Gray, List of B.* pt. iii. p. 188 (1844); *Rüpp. Vög. N.O.-Afr.* p. 140 (1845) [Nile]; *Hartl. J. f. O.* 1854, p. 308; *Brehm, Vogelfang*, p. 361 (1855); *Heugl. Vög. N.O.-Afr.* p. 72 (1856); *Hartl. Syst. Orn. W.-Afr.* p. 260 (1857); *Heine, J. f. O.* 1860, p. 202 [Camma R.]; *Gurney, Ibis*, 1862, p. 154 [Natal]; *Kirk, Ibis*, 1864, p. 338 [Zambesi]; *Monteiro, P. Z. S.* 1865, p. 89 [Benguela]; *Bocage, J. Acad. Lisb.* no. ii. p. 150 (1867), no. viii. p. 351 (1870); *Sharpe, Ibis*, 1870, p. 448 [Volta, Fantee]; *Antin. & Salvad. Cat. Ucc. Bogos*, p. 152 (1873) [Bogos]; *Dresser, B. Europe*, vi. p. 169, pl. 390 (1876); *Ayres, Ibis*, 1880, p. 273 [Transvaal]; *Shelley, P. Z. S.* 1881, p. 602 [Usambara Hills, E. Africa]; *Forbes, Ibis*, 1883, p. 523 [R. Niger]; *Sharpe's ed. Layard, B. S. Afr.* p. 781 (1884); *Shelley, Ibis*, 1888, p. 307 [Jipi]; *Rendall, Ibis*, 1892, p. 226 [Gambia]; *Sibree, Ibis*, 1892, p. 272 [Madagascar]; *Sharpe, Ibis*, 1892, p. 540 [Ripon Falls, Nile]; *Reichenow, J. f. O.* 1892, p. 4; *id. Vög. Deutsch-*

- O.-Afr.* p. 22, fig. 9 (1894); *Shelley, Ibis*, 1894, p. 28, 1896, p. 241 [Nyassaland]; *Kuschel, J. f. O.* 1895, p. 83 [eggs]; *W. L. Slater, Ibis*, 1896, pp. 521, 522 [Dassen I.]; *Shelley, Ibis*, 1897, p. 551 [Lake Nyasa]; *Reichenow, J. f. O.* 1897, p. 2 [Togo].
- Carbo africanus*, *Less. Traité d'Orn.* p. 604 (1831) [part, female]; *Pucheran, Rev. et Mag. Zool.* 1850, p. 626; *Hartert, J. f. O.* 1886, p. 612 [Niger].
- ? *Phalacrocorax pygmaeus*, *Childr. in Denham & Clapperton's Trav. in Afr., App.* p. 206 (1826) [Central Africa].
- Carbo africanoides*, *Smith, Rep. Exped. Cent. Afr., App.* p. 57 (1836) [New Latakoo]; *id. Willugh Soc.* p. 123 [reprint 1880].
- Carbo longicaudus*, *Swains. B. W. Afr.* ii. p. 255, pl. 31 (1837).
- Graculus africanus*, *Reichenb. Natatores*, pl. xxxiv, fig. 867 (1850); *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 15 (1863); *id. P. Z. S.* 1866, p. 420 [Madagascar]; *Layard, B. S. Afr.* p. 381 (1867); *Schley & Pollen, Rech. Faun. Madagas.* pt. ii. *Ois.* p. 137 (1868); *Gurney, Ibis*, 1868, p. 264 [Natal]; *Layard, Ibis*, 1869, p. 77 [Grahamstown], p. 377 [Berg R.]; *Blanf. Zool. Abyss.* p. 441 (1870) [Lake Aabangi]; *Finsch & Hartl. Vog. Ost-Afr.* p. 847 (1870); *Finsch, Tr. Zool. Soc.* vii. pt. iv. p. 330 (1870); *Gray, Hand-l. B.* iii. p. 129 (1871); *Gurney, ed. Anderas. B. Damaral.* p. 370 (1872); *Bocage, J. Acad. Lieb.* no. xiii. p. 70 (1872), no. xviii. pp. 290, 294 (1873); *Heugl. Orn. N.O.-Afr.* iii. p. 1403 (1873); *Bartlett, P. Z. S.* 1875, p. 69 [S.E. Madagascar]; *Barratt, Ibis*, 1876, p. 214 [Leydenburg Distr.]; *Ayres, Ibis*, 1877, p. 354 [Transvaal]; *Fisch u. Reich J. f. O.* 1878, p. 247 [Tana]; *Bocage, Orn. Angola*, p. 522 (1881); *Sharpe in Oates, Malabeleland*, p. 328 (1881); *Böhm, J. f. O.* 1882, p. 179 [Ugalla R.]; *Schal. J. f. O.* 1883, p. 338 [Gombe R.]; *Böhm, J. f. O.* 1885, p. 37; *Fisch. J. f. O.* 1885, p. 114 [E. Africa]; *Büttikof. Notes Leyd. Mus.* vii. p. 252 (1885) [Liberia]; *Grandulier, Hist. Madag.*, *Ois.* p. 685, pls. 282, 283 (1885); *Matsch J. f. O.* 1887, pp. 137, 144 [Katuma, Marungu].
- Graculus longicaudus*, *Reichenb. Natatores*, pl. xxxiv, fig. 868 (1850).
- Microcarbo africanus*, *Bonap. Consp. Av.* ii. p. 178 (1855).
- Graculus coronatus*, *Wahlberg, J. f. O.* 1857, p. 4 [Possession I., S.W. Africa].
- Haliastur africanus*, *Hartl. J. f. O.* 1860, p. 175; *id. Orn. Madagas.* p. 86 (1861); *id. Vog. Madagas.* p. 398 (1877).

*Adult in breeding-plumage.* General colour of plumage shining black, with a dull greenish gloss; upper back and wing-coverts grey, tipped and narrowly bordered with black and, when freshly moulted, narrowly fringed with whitish buff; scapulars brownish grey, and similarly marked to the back and wing-coverts. Feathers bordering the forehead and fore part of the crown white, with the tips of the shafts dilated and black and having the appearance of short stiff bristles; a tuft of white hair-like feathers above the ear. Tail composed of 12 feathers.

Iris bright crimson; eyelids pinkish flesh-colour; bare skin of face flesh-colour or bluish; bill chrome-yellow; ridge, tip and part of lower mandible more or less light dusky brown and more or less barred; legs and feet black.

Total length about 22 inches, culmen 1.2, wing 8.8, tail 6, tarsus 1.4-1.5, outer toe and claw 2.7.

*Adult in non-breeding plumage.* Top of the head and neck brown, darkest above, palest below; feathers of the upper back, scapulars and wing-coverts margined with brownish white; chin and throat white; base of neck and chest brownish white; breast and belly white; plumage otherwise similar to the preceding.

*Young in first plumage* (Potchefstroom, May). Top of the head and back of the neck dark brown, paler on the cheeks and sides of the neck; upper back and shorter scapulars brownish black, each feather margined with brownish white; rest of scapulars and wing-coverts brownish grey, rather widely margined with dark brown and fringed with brownish white; chin and throat white; fore-neck, chest, and upper breast brownish white; rest of breast and belly dirty white; sides, flanks, and under tail-coverts black; quills and tail-feathers blackish, pointed at the extremity and margined with brownish white.

Very soon the adult plumage begins to make its appearance among the feathers of the upper parts, the new scapulars and wing-coverts being conspicuous. When this plumage is complete the young resembles the adult in non-breeding plumage.

In the adult the very marked change into the shining black breeding-plumage appears to be *generally* attained by moult, but, in some examples at least, some of the white feathers of the underparts become black by change of colour without a moult.

*Hab.* Africa south of about  $29\frac{1}{2}^{\circ}$  N. lat.; Madagascar.

|                                   |                                                                                            |                            |
|-----------------------------------|--------------------------------------------------------------------------------------------|----------------------------|
| <i>a, b.</i> Ad. sk.              | Fayoom, Egypt, Mar. 6 ( <i>G. E. S.</i> ).                                                 | Shelley Coll.              |
| <i>c.</i> Ad. sk.                 | Lake Ashangi, Abyssinia, 8000 feet, May 4.                                                 | W. T. Blanford, Esq. [C.]. |
| <i>d.</i> Imm. sk.                | Zanzibar.                                                                                  | Shelley Coll.              |
| <i>e.</i> ♂ ad. sk.               | Lake Nyasa, June ( <i>A. Whyte</i> ).                                                      | Sir H. H. Johnston [P.].   |
| <i>f.</i> Ad. sk.                 | Lake Shirwa ( <i>A. W.</i> ).                                                              | Sir H. H. Johnston [P.].   |
| <i>g.</i> Imm. sk.                | Lake Shirwa, Sept. 20 ( <i>A. W.</i> ).                                                    | Sir H. H. Johnston [P.].   |
| <i>h-j.</i> Ad. et imm. sk.       | Upper Shiré River, Nov. ( <i>A. W.</i> ).                                                  | Sir H. H. Johnston [P.].   |
| <i>k.</i> Ad. sk.                 | Nr. Mpimbi, Shiré River, July ( <i>J. McDonald</i> ).                                      | Sir H. H. Johnston [P.].   |
| <i>l.</i> Ad. sk.                 | Matabili ( <i>W. E. &amp; C. G. Oates</i> ).                                               | Shelley Coll.              |
| <i>m-o.</i> ♂ ♀ ad. et ♂ imm. sk. | Potchefstroom, May to July ( <i>T. L. Ayres</i> ).                                         | J. H. Gurney, Esq. [P.].   |
| <i>p, q.</i> Ad. sk.              | Potchefstroom.                                                                             | F. A. Barratt, Esq. [P.].  |
| <i>r, s.</i> Ad. et imm. sk.      | South Africa.                                                                              | Sir A. Smith [P.].         |
| <i>t.</i> ♀ ad. sk.               | Latakoo, S. Africa.                                                                        | Sir A. Smith [P.].         |
| <i>u, v.</i> ♂ ♀ ad. sk.          | Rio Coroca, Angola, Jan. ( <i>Anchieta</i> ).<br>(Type of <i>C. africanoides</i> , Smith.) | Shelley Coll.              |
| <i>w.</i> ♂ ad. sk.               | Huilla, Mossamedes, Feb. ( <i>Anchieta</i> ).                                              | Shelley Coll.              |
| <i>x.</i> Ad. sk.                 | Benguela.                                                                                  | J. J. Monteiro, Esq. [C.]. |



|                |                                 |                     |
|----------------|---------------------------------|---------------------|
| y. Ad. sk.     | W. Africa.                      | Sir E. Sabine [P.]. |
| z, a'. Ad. sk. | W. Africa.                      | Governor Randall    |
|                |                                 | [P.].               |
| y. Ad. sk.     | Gold Coast.                     | Shelley Coll.       |
| σ-f. Ad. sk.   | Accra, May (J. Smith).          | Shelley Coll.       |
| g'. Ad. sk.    | Madagascar.                     | Dr. R. Bowdler      |
|                |                                 | Sharpe [P.].        |
| A'. Ad. sk.    | Madagascar (Rev. J. Wills).     | J. H. Gurney, Esq.  |
|                |                                 | [P.].               |
| i. ♂ ad. sk.   | Madagascar, May 23.             | Purchased.          |
| k'. Ad. sk.    | W. of Antananarivo, Madagascar, | Rev. W. Deane       |
|                | July.                           | Cowan [C.].         |

### Sub-family II. PLOTINÆ.

Articulation of cervical vertebræ very peculiar, producing the curious kink in the neck of the Darters which cannot be obliterated without lacerating the surrounding muscles. The first eight (including the atlas and axis), when placed in their proper relations to one another, form a continuous curve with a strong concavity forwards, the long eighth vertebra being nearly parallel with the bill when held horizontally.

The superficial temporal muscles meet behind the skull along a median fibrous raphe, which becomes ossified into a feebly-developed bony style in *P. ankinga*.

Left carotid artery only present.

Peculiar hairy covering of the pyloric portion of the gastric cavity largely developed.

Skin not in the least emphysematous.

Body nearly uniformly clothed with small, rather soft, contour-feathers and very delicate down-feathers. Besides the lateral spaces of the trunk, only a narrow inferior space is found: all other spaces wanting.

#### 2. PLOTUS\*.

Type.

Ankinga, *Brisson, Orn.* vi p. 476 (1760); *Cones, Bull.*

*Nutt. Orn. C.* iii. p. 101 (1878) [derivation of name].. *P. ankinga*.

*Plotus, Linn. S. N.* i p. 218 (1766) ..... *P. ankinga*.

*Plottus, Scop. Introd. Hist. Nat.* p. 474 (1777) ... .. *P. ankinga*.

Bill slender, compressed, straight and very sharply pointed; the

\* The following works refer to the anatomy and osteology, etc. of *Plotus* :—  
 Brandt, *Mém. Acad. St. Pétersb.* (6) v. pt. 2, pp. 82, 99, 132, 178, pls. iv., v. (1839) [osteology of *P. ankinga*]; Eyton, *Osteol. Av.* p. 218 (1867); Nitzsch, *Pteryl.*, Engl. ed. p. 151 (1867); Donitz, *Arch. f. Anat. u. Phys.* 1873, p. 357; Garrod, *P. Z. S.* 1876, pp. 335-345, pls. xxvi. xxviii. [anatomy, *P. ankinga*]; Forbes, *P. Z. S.* 1877, p. 304 [bursa Fabricii]; Garrod, *P. Z. S.* 1878, pp. 679-681 [anatomy of *P. rufus (leucillanti)*]; Mivart, *Tr. Z. S.* x pt. vii pp. 315-378, pls. lvi., lxi. figs. 6-10 (1878) [axial skeleton]; Forbes, *Ibis*, 1881, pp. 7, 23, 24; Forbes, *P. Z. S.* 1882, pp. 208-212, figs. 1, 2 [anatomy of *P. melanogaster*]; Cazin, *Ann. Sci. Nat.* (6) xviii. Art. 3, 1 p. (1884); Shufeldt, *Ibis*, 1894, pp. 364-365, fig. 1 [fibula].

cutting-edges of the mandibles serrated along the terminal half; no lateral groove; nostrils rudimentary. Neck very long and slender, with a bend at the eighth and ninth vertebræ, and provided with a peculiar mechanism which enables the bird, by suddenly straightening the neck, to transfix with its bill the fishes it captures. Wing pointed, the primaries stiff and strong, the second or third quill longest; scapulars elongate and lanceolate. Tail long, cuneate, and composed of twelve rigid feathers; the middle pair of tail-feathers as well as the innermost secondaries transversely ribbed. Tarsus short, outer toe longest; claws curved, that of the middle toe pectinate.

*Range.* Lake of Antioch, North Syria; Africa south of about 20° N. latitude; Madagascar; Mesopotamia to the Indo-Chinese countries, through the Malay Archipelago, to New Guinea, Australia, and New Zealand. Tropical and subtropical America.

*Key to the Species.*

I. Tail not tipped with white.

A. Outer webs of the secondary-coverts mostly reddish brown, entire fore-neck from throat downward chestnut.

a. Black at the base of the fore-neck and chest not divided from the base of the hind-neck and upper back by chestnut bands . . . .

*rufus* ♂ ad., p. 412.

b. Black at the base of the fore-neck and chest divided on each side from the base of the hind-neck and upper back by a chestnut band, terminating at the shoulder. . . . .

*rufus* ♀ ad., p. 412.

B. Outer webs of the secondary-coverts mostly silvery white; the fore-neck never entirely chestnut.

c. Scapulars much elongate, more than 5 inches in length.

a'. Black at the base of the fore-neck and chest not divided from the brown base of the hind-neck and upper back by buff bands . . . . .

[? very old ♀, p. 414.  
*melanogaster* ♂ ad.,

b'. Black at the base of fore-neck and chest divided on each side from the hind-neck and upper back by a wide buff band, terminating at the shoulder . . . . .

[p. 414.  
*melanogaster* ♀ ad.,

d. Scapulars less elongate, less than 5 inches in length.

c'. Neck and underparts black; an elongate patch of chestnut on the base of the fore-neck . . . . .

[p. 417.  
*novæ-hollandiæ* ♂ ad.,

d'. Fore-neck and underparts white. . . . .

*novæ-hollandiæ* ♀ ad.,  
[p. 417.

II. Tail tipped with white.

C. Fore-neck and chest black like the rest of the underparts. . . . .

*anhinga* ♂ ad., p. 419.

D. Fore-neck and chest whitish or buff . . . . .

*anhinga* ♀ ad., p. 419.

1. *Plotus rufus*.

- L'Anhinga du Sénégal, *D'Aubent. Pl. Ent.* ix. pl. 92 [no. 107].  
 L'Anhinga roux, *Buff. Hist. Nat. Ois.* viii. p. 453 (1781).  
 Black-bellied Darter, var. c. Rufous Darter, *Lath. Gen. Syn.* iii. pt. ii. p. 626 (1785).  
*Plotus rufus*, *Lacép. et Daubin, in Buff. Hist. Nat.* (18<sup>me</sup> Didot) *Quadr.* xiv. p. 319, *Ois.* xvii. p. 81 (1799); *Licht. Verz. Doubl.* p. 87 (1823).  
*Plotus congensis*, *Cranch in Tuckey, Exped. Riv. Zaire, App.* iv. p. 408 (1818); *G. R. Gray, Gen. B.* iii. p. 664 (1848); *Layard, B. S. Afr.* p. 378 (1867); *Buratt, Ibis*, 1876, p. 214 [Transvaal, Orange Free State, British Kaffraria].  
*Plotus levaillantii*, *Licht. Verz. Doubl.* p. 87 (1823) [Kaffir Land]; *Temm. Pl. Col.* v. pl. 120 [no. 380] (1825); *Schinz, Nat. Abbild. Vög.* p. 391, pl. 134, fig. (1833); *G. R. Gray, List of B.* pt. iii. p. 182 (1844); *Rupp. Vög. N.O.-Afr.* p. 140 (1845); *Reichenb. Natatores*, pl. xixii. nos. 352-3 (1850); *Hartl Beitr Orn. W.-Afr.* p. 44 (1852); *Hartl. J. f. O.* 1854, p. 307 [W. Africa]; *Bonap. Conspect. Av.* ii. p. 181 (1855); *Heugl. Vög. N.O.-Afr.* p. 71 (1856); *Hartl. Syst. Orn. W.-Afr.* p. 258 (1857); *Bolle, J. f. O.* 1858, p. 473 [Soudan]; *Gurney, Ibis*, 1859, p. 251 [Natal]; *Heine, J. f. O.* 1860, p. 202 [R. Camma]; *Hartl. J. f. O.* 1861, p. 273 [W. Africa]; *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 25 (1863); *Gurney, Ibis*, 1863, p. 332; *Kirk, Ibis*, 1864, p. 338 [Zambesi Region]; *Hartmann, J. f. O.* 1864, p. 144 [N.E. Africa]; *Monteiro, P. Z. S.* 1865, p. 89 [Benguela]; *Finsch & Hartl. Vög. Ost-Afr.* p. 841 (1870); *G. R. Gray, Hand-l. B.* iii. p. 125 (1871); *Gurney, ed. Anders. B. Damaral.* p. 367 (1872); *Heugl. Orn. N.O.-Afr.* iv. p. 1475 (1873); *Buckley, Ibis*, 1874, p. 391 [Transvaal]; *Reichenow, J. f. O.* 1874, p. 373 [Cameroons]; *Bocage, J. f. O.* 1876, p. 293 [Humbé], p. 434 [Bessao], p. 441 [Cunene R.]; *Reichenow, J. f. O.* 1877, pp. 8, 10 [Loango Coast]; *Fischer & Reichenow, J. f. O.* 1878, p. 247 [Tana]; *Sharpe & Bouvier, Bull. Soc. Z. Fr.* iii. p. 80 (1878) [Congo]; *Bartlett, P. Z. S.* 1879, p. 773 [S.E. Madagascar]; *Bocage, Orn. Angola*, p. 519 (1881). *Hulub & Pelz. Beitr. Orn. S. Afr.* p. 333, 2 pls. (1882); *Bohm, J. f. O.* 1882, p. 179 [Ugalla R.]; *Tristram, Ibis*, 1882, p. 418 [Lake of Antioch, N. Syria, breeding]; *id. Surv. W. Palest.* p. 108, pl. xiii. (1884); *Sharpe's ed. Layard, B. S. Afr.* p. 782 (1884); *Bohm, J. f. O.* 1885, p. 37; *Fischer, J. f. O.* 1885, p. 114 [Lamu]; *Tristram, Ibis*, 1886, p. 41, pl. iii.; *Symonds, Ibis*, 1887, p. 336 [Orange Free State]; *Emin, Ibis*, 1887, p. 474 [Albert Nyanza]; *Reichenow, J. f. O.* 1887, p. 45 [Kagehi, Victoria Nyanza]; *Matschie, J. f. O.* 1887, p. 144 [Marungu]; *Schalow, J. f. O.* 1887, p. 220 [Tanganyika]; *Shelley, P. Z. S.* 1888, p. 50 [Lado, Equatorial Africa]; *id. Ibis*, 1888, p. 307 [Lamu Dist.]; *Reichenow, J. f. O.* 1889, p. 265 [Quaqua R.], 1890, p. 107 [Cameroons]; *Sharpe in Oates, Matabeleland*, p. 335 (1889); *Rendall, Ibis*, 1892, p. 226 [Gambia]; *Reichenow, J. f. O.* 1892, p. 4 [Victoria Nyanza, eggs]; *id. Vög. Deutsch-O.-Afr.* p. 23, fig. 10 (1894); *Shelley, Ibis*, 1894, p. 28 [Upper Shire R.]; *Sharpe, Ibis*, 1894, p. 119 [Suakim]; *Fleck, J. f. O.* 1894, pp. 365, 379 [S.W. Africa]; *Kuschel, J. f. O.* 1895, p. 83 [eggs]; *Reichenow, J. f. O.* 1896, p. 45; *Shelley, Ibis*, 1897, p. 551 [Songue, N. Nyasaland].  
 Rufous-winged Darter, *Lath. Gen. Hist. B.* x. p. 453 (1824).  
*Plotus melanogaster*, *Children (nec Gmel.) in Denham & Clapperton, Trav. in Afr., App.* p. 206 (1826) [Interior of Africa]; *Heugl.*

*J. f. O.* 1862, p. 408 [Bogos]; *Schleg. & Pollen, Recher. Faun. Madagas.* pt. ii. Ois. p. 137 (1868) [Madagascar]; *Hartl. Vög. Madagas.* p. 396 (1877); *Grandidier, Hist. Madagas., Ois.* p. 690, pls. 284, 285 (1885); *Sibree, Ibis*, 1892, pp. 266, 272 [Madagascar].

*Anhinga levaillanti*, *Lesson, Traité d'Orn.* p. 599, pl. 114, fig. 2 (1831).

*Plotus capensis*, *Layard, Ibis*, 1869, p. 77 [Berg R., nesting].

*Plotus chantrei*, *Oustalet, Ann. Sci. Nat.* (6) Art. 7, p. 8 (1882) [Antioch]; *Tristram, Ibis*, 1886, p. 42.

*Plotus* sp., *Forbes, Ibis*, 1883, pp. 505, 507, 514, 516, 522, 523 [R. Niger].

*Adult male.* Top of the head and back of the neck dark brown; throat and fore-neck rufous, darkest towards the basal part of the neck; a white band commencing below the eye and extending for about five inches down each side of the neck; a narrow line of feathers bordering the naked skin round the eye, as well as the forehead, and throat white; base of the neck, middle of the upper back, lower back, rump, upper tail-coverts, and rest of underparts black with an oil-green gloss; sides of the upper back, wing-coverts, scapulars, and inner secondaries black, with narrow white shaft-stripes; scapulars falcate and elongate, the longest measuring about 8·5 inches; *outer webs of the secondary-coverts mostly dark brown or reddish brown*; quills and tail-feathers shining black; the outer webs of the innermost secondaries and middle pair of tail-feather transversely ribbed. Tail composed of 12 feathers. Total length about 36 inches, culmen from feathers on forehead 3·25, wing 13·1–13·7, tail 9·2–10, tarsus 1·6–1·7, outer toe and claw 3·2.

*Adult female.* Differs from the adult male in having the top of the head and middle of the back of the neck reddish brown, the latter bordered on either side for half its length by a deep black band; the black fore-neck and chest bordered on each side by a rufous band which is continued to the shoulder, and the longest falcate scapulars not measuring more than 6 inches. Total length about 36 inches, culmen from feathers on forehead 3, wing 13·1, tail 9·3–9·5, tarsus 1·6, outer toe and claw 3·1.

Iris red; bill dark yellowish green; tarsi and feet blackish yellow (*T. Ayres*).

*Young in down.* Head, neck, and upper back covered with rust-coloured down; a white stripe down each side of the neck commencing behind the gape; rest of the body covered with white down; the feathers of the wing, tail, and scapulars but slightly developed; while among the down on the breast black feathers fringed with brown are beginning to make their appearance. Total length about 20 inches.

*The immature male* appears to assume the black plumage of the adult on the breast and underparts immediately on leaving the down. This is apparent from the young bird described above.

*A young male* from Nyasa-land evidently in first plumage has the entire underparts black, the feathers being only slightly fringed with buff at the extremity.

*Immature female in first plumage* has the entire underparts silky buff, only the sides and flanks being brown.

*In a more mature specimen*, with the black and white marks on the sides of the neck well-developed, the scapulars long and falcate, and the innermost secondaries and middle pair of tail-feathers strongly ribbed, the buff of the underparts is being replaced by the black plumage of the fully adult; this change is almost entirely produced by moult, though some of the feathers are undoubtedly changing from buff to black without a moult.

*Hab.* Lake of Antioch, North Syria; Africa, north of about 20° N. latitude; Madagascar.

|                              |                                         |                                     |
|------------------------------|-----------------------------------------|-------------------------------------|
| a. Imm. sk.                  | Near Suakim.                            | Capt. R. H. Penton<br>[P.]          |
| b. ♀ ad. sk.                 | Lado, Equatorial Africa,<br>Sept. 29.   | Emin Pasha [P.]                     |
| c, d. Ad. sk.                | Upper Shiré River, Nov.<br>(A. Whyte).  | Sir H. H. Johnston<br>[P.]          |
| e. ♂ imm. sk.                | Songue, N. Nyasa-land, July<br>(A. W.). | Sir H. H. Johnston<br>[P.]          |
| f. ♂ ad. sk.                 | Zambesi (Bradshaw).                     | Shelley Coll.                       |
| g. ♀ imm. sk.                | Marico, Transvaal (F. Oates).           | W. E. & C. G. Oates,<br>Esqrs. [P.] |
| h. ♂ imm. sk.                | Potchefstroom.                          | F. A. Barratt, Esq.<br>[P.]         |
| i. ♂ ad. sk.                 | Kingwilliamstown.                       | Lieut. Anstey [P.]                  |
| k. ♂ ad. sk.                 | Kingwilliamstown.                       | J. H. Gurney, Esq.<br>[P.]          |
| l. ♀ ad. sk.                 | South Africa (Layard).                  | Shelley Coll.                       |
| m o. ♂ ♀ ad.<br>et pull. sk. | South Africa.                           | Purchased.                          |
| p. ♀ imm. sk.                | Benguela.                               | J. J. Monteiro, Esq.<br>[C.]        |
| q. ♀ ad. sk.                 | West Africa.                            | Capt. Sabine [P.]                   |
| r. ♀ ad. sk.                 | Egga, Niger River.                      | Capt. M. Ferryman<br>[P.]           |
| s. ♀ juv. sk.                | Madagascar (C. Bewsher).                | Shelley Coll.                       |
| t. Skeleton (mounted).       |                                         | Purchased.                          |

## 2. *Plotus melanogaster*.

Black-bellied Darter, *Lath. Gen. Syn.* iii. pt. ii. p. 624 (1785); *id. Gen. Hist. B.* x p. 451 (1824).

*Plotus melanogaster*, *Gmel. S. N.* i. pt. ii. p. 580 (1788) [nec  $\beta$ ,  $\gamma$ ,  $\delta$ ]; *Lath. Ind. Orn.* ii. p. 895 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 41, pl. xii. fig. 2 (1790) [nec  $a$ ,  $b$ ,  $c$ ,  $d$ ]; *Vieill. N. Dict. d'Hist. Nat.* i. p. 546 (1816); *Raffles, Tr. Linn. Soc.* xiii. p. 30 (1822) [Sumatra]; *Franklin, P. Z. S.* 1831, p. 125 [Ganges]; *Sykes, P. Z. S.* 1832, p. 171 [Deccan]; *G. R. Gray, List of B.* pt. iii. p. 181 (1844); *Hodgs. Icon. ined.* no. 655; *id. in Gray's Zool. Misc.* p. 86 (1844); *G. R. Gray, Cat. Hodgs.* p. 148 (1846); *id. Gen. B.* iii. p. 664 (1848); *Layard, Ann. Mag. N. H.* (2) xiv. p. 271 (1854) [Ceylon]; *Bonap. Consép. Ar.* ii. p. 181 (1855); *Irby, Ibis*, 1861, p. 247 [Oudh & Kumaon]; *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 26 (1863) [part]; *Jerd B. Ind.* iii. p. 865 (1864); *v. Martens, J. f. O* 1866, p. 30 [Luzon]; *Blyth, Ibis*, 1867, p. 181; *G. R. Gray, Hand-l. B.* iii. p. 125 (1871); *Holdsw. P. Z. S.* 1872, p. 483

[Ceylon]; *Walden & Layard, Ibis*, 1872, p. 96 [Negros I.]; *Hume, Nests & Eggs Ind. B.* p. 661 (1873); *id. Str. F.* i. pp. 121, 188, 289 (1873) [Sind]; *Adam, Str. F.* i. p. 403 (1873) [Sambhur Lake]; *Ball, Str. F.* ii. p. 440 (1874) [Chota Nagpur]; *Salvad. Ucc. Borneo*, p. 367 (1874); *Hume, Str. F.* ii. p. 484 (1874) [Tenasserim], iii. p. 194 (1875) [Pegu]; *Legge, Ibis*, 1875, p. 409 [Ceylon]; *Blyth & Walden, Cat. Mamm. & B. Burma*, p. 165 (1875); *Butler, Str. F.* iv. pp. 34, 35 (1876) [Mt. Aboo & N. Guzerat]; *Fairbank, Str. F.* iv. p. 264 (1876) [Deccan Rivers]; *Oates, Str. F.* v. p. 170 (1877) [Pegu, nesting]; *Hume & Davison, Str. F.* vi. p. 496 (1878) [Tenasserim]; *Davidson & Wenden, Str. F.* vii. p. 94 (1878) [Deccan]; *Hume, Str. F.* vii. p. 98 (1878) [Oodeypore]; *Ball, Str. F.* vii. p. 234 (1878) [Ganges to Godaveri]; *Anders. B. W. Yunnan*, p. 698 (1878); *Cripps, Str. F.* vii. p. 315 (1878) [Faridpur]; *Scully, Str. F.* viii. p. 364 (1879) [Nepal]; *Doig, Str. F.* viii. p. 372 (1879) [E. Narra, breeding]; *Butler, Cat. B. Sind*, p. 82 (1879); *Meyer, Ibis*, 1879, p. 145 [Celebes]; *Sharpe, P. Z. S.* 1879, p. 353 [Labuan]; *Vidal, Str. F.* ix. p. 96 (1880) [S. Konkan]; *Butler, Str. F.* ix. p. 442 (1880) [Deccan & Mahratta country]; *Legge, B. Ceylon*, iii. p. 1194 (1880); *Reid, Str. F.* x. p. 88 (1881) [Lucknow]; *Oates, Str. F.* x. p. 248 (1882) [Pegu]; *Davidson, Str. F.* x. p. 327 (1882) [W. Khandeish]; *Kelham, Ibis*, 1882, p. 203 [Malacca, Perak]; *Davison, Str. F.* x. p. 419 (1883) [Wynaad & S. Mysore]; *Parker, Ibis*, 1883, p. 194 [Ceylon, Feb. to April, breeding]; *Blasius, J. f. O.* 1883, p. 140 [Celebes]; *Oates, B. Burmah*, ii. p. 235 (1883); *Swinh. & Barnes, Ibis*, 1885, p. 138 [Central India]; *Tristram, Ibis*, 1886, p. 41; *Blasius, Zeit. ges. Orn.* iii. pp. 175, 209 (1886) [Celebes]; *Whitehead, Ibis*, 1888, p. 412 [Borneo]; *Hume, Str. F.* xi. p. 353 (1888) [Sylhet, Cachar, Manipur]; *Hartert, J. f. O.* 1889, p. 407 [Salanga]; *Everett, J. Str. Br. As. Soc.* xx. p. 188 (1889) [Borneo]; *Oates, ed. Hume's Nests & Eggs*, iii. p. 274 (1890); *Sharpe, Ibis*, 1890, pp. 149, 285 [N. Borneo]; *Hartert, J. f. O.* 1891, p. 302 [Mindoro]; *Hoe, Ibis*, 1893, p. 420 [Sarawak].

*Anhinga melanogaster*, *Pennant, Ind. Zool.* 2nd ed. p. 53, pl. 15 (1790).

*Plotus levaillanti*, *Griff. (nec Licht.) ed. Cuv.* iii. pl. facing p. 656 (1829); *Ménéville, Icon. Règ. Anim., Ois.* pl. 65. fig. 1 (1829-38); *Ewer, P. Z. S.* 1842, p. 93 [N.W. of Bengal].

*Plotus novæ-hollandiæ*, *G. R. Gray (nec Gould), Gen. B.* iii. pl. clxxxiv. (1848); *Reichenb. Natatores*, pl. xxxv.\* nos. 2648-9 (1850).

**Adult male.** Chin, throat, and upper part of the fore-neck mottled with white; a narrow white line, about five inches long, commencing above the gape and continued down the sides of the neck; head and neck brown, darker and slightly glossed on the crown and along the back of the neck, and paler down the middle of the fore-neck, each feather being margined with pale brown and giving the whole a finely scaled appearance; upper back brownish black, each feather narrowly margined with rufescent and streaked with white on the lateral parts; rest of back, rump, lower part of fore-neck, and underparts black with an oil-green gloss; wing-coverts, scapulars, and innermost secondaries black, each with a long silvery-white streak down the middle; scapulars much elongate and pointed, the longest measuring about 9 inches; the innermost secondary transversely

ribbed along the basal two-thirds of the outer web; quills and tail black, the middle pair of tail-feathers strongly ribbed on the outer web and the outer pairs slightly rayed. Tail composed of 12 feathers. Iris yellow; bill dusky on the culmen, yellowish on the sides and on the lower mandible; legs black (*H. H. Godwin-Austen*). Total length about 35 inches, culmen from feathers on forehead 3·5–3·6, wing 13·14, tail 8·6–9, tarsus 1·7, outer toe and claw 3·2.

*The fully adult female* (if the sex of several specimens in the British Museum is correctly determined) appears to be perfectly similar in plumage to the male, the only difference being that the bill is decidedly shorter, 3·1–3·2 inches. In some females, however, which appear to be perfectly adult, the black bases of the fore-neck and the chest are divided on either side from the back by a whitish-buff band, as in immature birds.

*Immature birds* have the plumage of the same general colour as the adult, but the neck is much lighter and of a pale brownish white, becoming white down the middle of the fore-neck; the black on the base of the fore-neck and chest is bordered on each side by a whitish-buff band; the streaks on the upper plumage are of a more yellowish white, and the long pointed scapulars are absent or half developed: the quills and tail-feathers are pointed and narrowly margined at the tips with pale whitish brown, and the ribs on the innermost scapulars and tail-feathers are but slightly indicated: the back, rump, and upper tail-coverts are brownish black.

*Young in down.* Head, neck, upper back and underparts covered with white down, amongst which the plumage of the immature is more or less visible; quill- and tail-feathers half-grown, pointed and narrowly margined at the extremity with pale brownish white; scapulars and wing-coverts much like those of the adult, but fringed externally with brown. Total length 28·5 inches.

*Hab.* From Mesopotamia to India, Ceylon, and the Indo-Chinese countries; through the Malay Peninsula to Borneo, Celebes, and the Philippine Islands.

|                            |                                                              |                          |
|----------------------------|--------------------------------------------------------------|--------------------------|
| a. ♀ ad. sk.               | Babylon ( <i>Commander Jones</i> ).                          | India Museum [P.].       |
| b. ♀ ad. sk.               | [India.]                                                     | Old Coll.                |
| c. ♂ imm. sk.              | Ranipur, Sindh, Feb. ( <i>H. Gould</i> ).                    | India Museum [P.].       |
| d. Imm. sk.                | Khandeish.                                                   | Tweeddale Coll.          |
| e. ♀ imm. sk.              | Mhow. Oct. 18.                                               | Colonel Swinhoe [P.].    |
| f, g. ♂ ♀ ad. sk.          | Sirsa Dist.                                                  | Hume Coll.               |
| h-k. ♀ ad. et imm. sk.     | Urneewalla, Sirsa Dist., Mar., Nov.                          | Hume Coll.               |
| l, m. ♂ ♀ ad. sk.          | Sultanpur, Gurgaon Dist., Aug. & Oct. ( <i>W. N. Hill</i> ). | Hume Coll.               |
| n. ♂ ad. sk.               | Karnaul, near Delhi.                                         | Hume Coll.               |
| o ♀ ad. sk.                | Delhi.                                                       | Hume Coll.               |
| p-r. ♂ ♀ ad. et ♀ imm. sk. | Etawah                                                       | Hume Coll.               |
| s-w. ♂ ad. et imm sk.      | Nepal.                                                       | B. H. Hodgson, Esq [P.]. |
| x-e'. ♂ ♀ ad. sk.          | Sikhim, March, April, Nov., Dec. ( <i>L. Mandelli</i> ).     | Hume Coll.               |
| f'. ♀ imm. sk.             | Bhotan ( <i>Pemberton</i> )                                  | India Museum [P.].       |



|                                                                   |                                                      |                               |
|-------------------------------------------------------------------|------------------------------------------------------|-------------------------------|
| <i>g'</i> . ♀ ad. sk.                                             | Behar ( <i>B. H. Hodgson</i> ).                      | India Museum [P.]             |
| <i>h'</i> . [♂ imm.] sk.                                          | Bengal ( <i>Falconer</i> ).                          | India Museum [P.]             |
| <i>i'</i> . ♀ ad. sk.                                             | Madras, June 9 ( <i>R. G. Wardlaw Ramsay</i> ).      | Tweeddale Coll.               |
| <i>k'</i> . ♂ ad. sk.                                             | Assam.                                               | Godwin-Austen Coll.           |
| <i>l'</i> , <i>m'</i> . ♂ ad. et imm. sk.                         | Assam ( <i>McClelland</i> ).                         | India Museum [P.]             |
| <i>n'</i> . ♂ ad. sk.                                             | N. Khasia Hills, Feb. ( <i>A. W. Chennell</i> ).     | Tweeddale Coll.               |
| <i>o'</i> . ♀ ad. sk.                                             | Nazirpur, Mymensing.                                 | Godwin-Austen Coll.           |
| <i>p'</i> . ♂ imm. sk.                                            | Kamlangpani, April 8.                                | Godwin-Austen Coll.           |
| <i>q'</i> . ♂ ad. sk.                                             | Manipur, March 19 ( <i>A. O. H.</i> ).               | Hume Coll.                    |
| <i>r'</i> , <i>s'</i> . ♀ imm. sk.                                | Lower Pegu, April 11.                                | E. W. Oates, Esq. [C.]        |
| <i>t'</i> . ♀ ad. sk.                                             | Near Rangoon.                                        | Hume Coll.                    |
| <i>u'</i> . ♀ ad. sk.                                             | Sittang River, Dec. 30 ( <i>R. G. W. R.</i> ).       | Tweeddale Coll.               |
| <i>v'</i> . ♀ ad. sk.                                             | Tenasserim.                                          | J. D. C. Packman, Esq. [P.]   |
| <i>w'</i> . ♂ ad. sk.                                             | Assoun, Lower Burmah, March 4 ( <i>W. Davison</i> ). | Hume Coll.                    |
| <i>x'</i> . ♂ ad. sk.                                             | Wimpong, Lower Burmah, Jan. 2 ( <i>W. D.</i> ).      | Hume Coll.                    |
| <i>y'</i> . ♂ imm. sk.                                            | Pinang ( <i>Dr. Cantor</i> ).                        | India Museum [P.]             |
| <i>z'</i> . ♀ ad. sk.                                             | Prov. Wellesley ( <i>Dr. Cantor</i> ).               | India Museum [P.]             |
| <i>a</i> <sup>2</sup> . ♂ ad. sk.                                 | Malacca ( <i>Dr. Maingay</i> ).                      | Tweeddale Coll.               |
| <i>b</i> <sup>2</sup> - <i>f</i> <sup>2</sup> . ♂ ♀ ad. sk.       | Malacca.                                             | Capt. Stackhouse Pinwill [P.] |
| <i>g</i> <sup>2</sup> . ♂ ad. sk.                                 | Johore.                                              | A. R. Wallace, Esq. [P.]      |
| <i>h</i> <sup>2</sup> . ♀ ad. sk.                                 | Saigon, Cochin China.                                | M. Pierre [P.]                |
| <i>i</i> <sup>2</sup> . ♂ ad. sk.                                 | China.                                               | J. R. Reeves, Esq. [P.]       |
| <i>k</i> <sup>2</sup> . ♂ imm. sk.                                | Luzon, Philippine Is.                                | Tweeddale Coll.               |
| <i>l</i> <sup>2</sup> . ♂ ad. sk.                                 | Mindoro, June 6.                                     | Steere Coll.                  |
| <i>m</i> <sup>2</sup> . ♀ ad. sk.                                 | Laguna, Mindoro, June 20 ( <i>F. S. Bourns</i> ).    | E. L. Moseley, Esq. [P.]      |
| <i>n</i> <sup>2</sup> - <i>p</i> <sup>2</sup> . Imm. et pull. sk. | Kina Benua River, Labuan.                            | Governor Ussher [C.]          |
| <i>q</i> <sup>2</sup> . ♀ ad. sk.                                 | Borneo.                                              | Rajah Brooke [P.]             |
| <i>r</i> <sup>2</sup> . ♂ ad. sk.                                 | Paitan R., N. Borneo, July.                          | A. H. Everett, Esq. [C.]      |
| <i>s</i> <sup>2</sup> . Pull. sk.                                 | Kawla Tutau, Baram R.                                | C. Hose, Esq. [P.]            |
| <i>t</i> <sup>2</sup> , <i>u</i> <sup>2</sup> . ♂ ♀ ad. sk.       | Celebes, Sept. 2.                                    | Salvin-Godman Coll.           |
| <i>v</i> <sup>2</sup> . ♂ ad. sk.                                 | Menado, N. Celebes.                                  | Tweeddale Coll.               |
| <i>w</i> <sup>2</sup> . Skull.                                    |                                                      |                               |
| <i>x</i> <sup>2</sup> . Skeleton.                                 | India.                                               | Purchased.                    |

3. *Plotus novæ-hollandiæ*.

New Holland Darter, *Lath. Gen. Hist. B.* x. p. 453 (1824).

*Plotus novæ hollandiæ*, *Gould, P. Z. S.* 1847, p. 34 [S. Australia]; *id. B. Austr.* vii. pl. 75 (1847); *Reichenb. Syn. Natatores*, pl. xxxi. nos. 2302-3 (1850); *Bonap. Consp. Av.* ii. p. 181 (1855); *Gould, Handb. B. Austr.* ii. p. 496 (1865); *G. R. Gray, Hand-l. B.* iii. p. 125 (1871); *Buller, Tr. N. Zeal. Inst.* vii. p. 217 (1874) [New

Zealand]; Ramsay, *P. Linn. Soc. N.S.W.* i. pp. 386, 396 (1876) [Port Moresby], ii. p. 203 (1877), iii. p. 302 (1878) [Laloki R.], iv. p. 102 (1879); *id.* *P. Z. S.* 1877, p. 349 [Australia & S.E. New Guinea]; Diggles, *B. Austr.* ii. pl. 121 (1877); Buller, *Man. B. N. Zeal.* p. 97 (1882); Salvad. *Orn. Pap.* iii. p. 406 (1882) [S.E. New Guinea]; Tristram, *Ibis*, 1886, p. 41; Buller, *B. N. Zeal.* 2nd ed. ii. p. 175 (1888); Ramsay, *Tab. List Austr. B.* p. 24 (1888); North, *Nests & Eggs B. Austr.* p. 363 (1889); *id.* *Rec. Austr. Mus.* i. p. 147 (1891) [eggs].

*Plotus melanogaster*, Schk. *Mus. Pays-Bas*, vi. *Pelec.* p. 26 (1863) [part].

*Anhinga novæ hollandiæ*, Hartert, *Kat. Mus. Senckenb.* p. 236 (1891).

*Adult male.* General colour glossy black, brownish on the crown and back of the neck; a wide white stripe commencing below the eye and extending for about four inches down each side of the neck; a rather wide band of white feathers bordering the bare throat; an elongate patch of chestnut about 4 inches long on the basal part of the fore-neck; sides of the upper back, scapulars, wing-coverts, and inner secondaries with elongate white shaft-stripes; the scapulars are much shorter than in the Indian and African species—the longest not exceeding 4 inches; the innermost secondaries and middle pair of tail-feathers transversely ribbed. Tail composed of 12 feathers. A dull-orange buff ring round the pupil, succeeded by a second ring of marbled brown and buff, which is bounded by an outer circle of orange-buff; naked skin at the base of the lower mandible wrinkled and yellow; upper mandible olive, under mandible dull yellow, both becoming brighter towards the base; feet yellowish flesh-colour, becoming brown on the upper part of the outer toes. Total length about 31 inches, culmen from feathers on forehead 2·8–3, wing 13·2–14, tail 8·4–9, tarsus 1·9, outer toe and claw 3·2 3·4.

*Adult female.* General colour brown above, white below; top of the head, back of the neck, and middle of the upper back brown, each feather margined with whitish and producing a finely mottled appearance; the wide white stripe on each side of the neck is present as in the male, but bordered on either side by black bands which unite, and extend towards the base of the neck for about an inch beyond the white; rest of the upper parts like those of the male; entire underparts white. Iris buff, latticed with brown; naked skin at the base of the bill and throat orange-yellow; feet pale yellow. Total length about 29 inches, culmen from feathers on forehead 2·9–3, wing 13·5–13·9, tail 8·9, tarsus 1·7, outer toe and claw 3·2 3·3.

*The immature male* resembles the female, but the feathers of the top of the head, back of the neck, and upper back are brown without conspicuous white margins; there is a rufous patch towards the base of the fore-neck, and some of the white feathers of the chest and breast are tipped with black; the innermost scapulars and middle tail-feathers are indistinctly rayed.

*The immature female* resembles the adult female, but the outer

webs of the innermost secondaries and middle pair of tail-feathers show merely slight traces of transverse rays.

*Hab.* Australia, ranging to South-east New Guinea and New Zealand.

|                                 |                                                                         |                           |
|---------------------------------|-------------------------------------------------------------------------|---------------------------|
| <i>a, b.</i> ♂ ♀ ad. sk.        | Australia.                                                              | Sir T. Mitchell [P.].     |
| <i>c.</i> ♀ juv. sk.            | Australia.                                                              | Sir George Grey [P.].     |
| <i>d.</i> ♂ ad. sk.             | Australia.                                                              | Metcalf Smith, Esq. [P.]. |
| <i>e.</i> ♀ ad. sk.             | Mt. Anderson, N.W. Australia,<br>Nov. 10 ( <i>T. H. Bowyer Bower</i> ). | Capt. Bowyer Bower [P.].  |
| <i>f, g.</i> ♂ ♀ ad. sk.        | Victoria River, Feb. 10.                                                | J. R. Elsey, Esq. [P.].   |
| <i>h, i.</i> ♂ ad. sk.          | Queensland ( <i>J. T. Cockerell</i> ).                                  | Salvin-Godman Coll.       |
| <i>k.</i> ♀ ad. sk.             | New South Wales.                                                        | Hume Coll.                |
| <i>l.</i> ♂ ad. sk.             | New South Wales.                                                        | Gould Coll.               |
| <i>m.</i> ♀ ad. sk.             | New South Wales.                                                        | Australian Museum [P.].   |
| <i>n-p.</i> ♂ ad. et ♀ imm. st. | New South Wales.                                                        | Australian Museum [P.].   |
| <i>q.</i> ♀ imm. sk.            | South Australia.                                                        | Sir George Grey [P.].     |
| <i>r.</i> ♀ ad. sk.             | [India.]                                                                | Sir George Elliot [P.].   |

#### 4. *Plotus anhinga*.

*L'Anhinga*, *Briss. Orn.* vi. p. 476 (1760) [Brazil & Cayenne].  
*Plotus anhinga*, *Linn. S. N.* i. p. 218 (1766); *Gmel. S. N.* i. pt. ii. p. 580 (1788); *Lath. Ind. Orn.* ii. p. 895 (1790); *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 319, *Ois.* xvii. p. 74 (1799); *Vieill. N. Dict. d'Hist. Nat.* i. p. 544 (1816); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 132 (1826); *Wied, Beitr.* iv. p. 900 (1832); *Schinz, Nat. Abbild., Vög.* p. 390, pl. 134. fig. (1833); *Nutt. Man. Orn.* p. 507 (1834); *Aud. Orn. Biog.* iv. p. 136, pl. 316 (1838); *id. B. Amer.* vii. p. 154, pl. 420 (1839); *G. R. Gray, List of B.* pt. iii. p. 181 (1844); *Tschudi, Faun. Peru., Orn.* p. 314 (1845); *G. R. Gray, Gen. B.* iii. p. 664 (1848); *Cab. in Schomb. Faun. Brit. Guian.* p. 764 (1848); *Reichenb. Natornes*, pl. xxxii. nos. 354-5, pl. cvi.<sup>c</sup> nos. 2945-6 (1850); *Lembeye, Av. Cuba*, p. 120, pl. 19 (1850); *Bonap. Consp. Av.* ii. p. 180 (1855); *Sclater, P. Z. S.* 1857, p. 207 [Jalapa]; *Gundl. J. f. O.* 1857, p. 239 [Cuba], 1861, p. 349; *Moore, P. Z. S.* 1859, p. 65 [Peten Lake]; *Sclater & Salv. Ibis*, 1859, p. 233 [Peten Lake]; *Baird, B. N. Amer.* p. 883 (1860); *Brewer, Pr. Bost. Soc.* vii. p. 308 (1860) [Cuba]; *Taylor, Ibis*, 1860, p. 316 [Honduras]; *Gundl. J. f. O.* 1862, p. 96 [Cuba]; *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 25 (1863); *Taylor, Ibis*, 1864, p. 96 [Orinoco]; *Fitz. Atl. Nat. Vög.* fig. 337 (1864); *Baird, J. f. O.* 1866, p. 343 [England]; *Dresser, Ibis*, 1866, p. 45 [Texas]; *v. Frantz, J. f. O.* 1869, p. 379 [Costa Rica]; *G. R. Gray, Hand-l. B.* iii. p. 125 (1871); *Coues, Key N. Amer. B.* p. 306 (1872); *Sclat. & Salv. P. Z. S.* 1873, p. 304 [E. Peru]; *Sclater, P. Z. S.* 1873, p. 2, fig. [Maranham]; *Gundl. J. f. O.* 1875, p. 405 [Cuba: habits]; *Laur. Bull. U.S. Nat. Mus.* iv. p. 50 (1876) [S.W. Mexico]; *Brown, Bull. Nutt. Orn. C.* iv. p. 13 (1879) [Alabama]; *Maynard, B. E. N. Amer.* p. 470 (1881); *Bartlett, P. Z. S.* 1881, p. 247; *Forbes, P. Z. S.* 1881, p. 248; *Brewst. Bull. Nutt. Orn. C.* vi. p. 41 (1881) [Florida]; *Brown, Bull. Nutt. Orn. C.* vii. p. 42 (1882) [South-west Texas]; *Coues, Bull. Nutt. Orn. C.*

- vii. p. 61 (1882) [Western Kansas]; *Nehrl. Bull. Nutt. Orn. C.* vii. p. 225 (1882); *Bailey, Bull. Nutt. Orn. C.* viii. p. 42 (1883) [Georgia]; *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 163 (1884); *Coues, Key N. Am. B.* p. 730 (1884); *Tacz. Orn. Pérou,* iii. p. 434 (1886); *Berlepsch, J. f. O.* 1887, pp. 28, 123 [Pilcomayo], 1889, p. 100 [Tonantins, Prov. Solimoes]; *Salvin, Ibis,* 1889, p. 376 [Cozumel I.]; *Königswald, J. f. O.* 1896, p. 387 [São Paulo]; *Goeldi, Ibis,* 1897, pp. 157, 162 [South Guyana].
- L'Anhinga de Cayenne, *D'Aubent. Pl. Ent.* ix. pl. 90 [no. 959].
- L'Anhinga noir de Cayenne, *D'Aubent. Pl. Ent.* ix. pl. 91 [no. 960].
- L'Anhinga, *Buff. Hist. Nat. Ois.* viii. p. 448, pl. xxv. (1781).
- White-bellied Darter, *Lath. Gen. Syn.* iii. pt. ii. p. 622 (1785) [juv.]; *id. Gen. Hist. B.* x. p. 449 (1824).
- Black-bellied Darter, var. A, *Lath. Gen. Syn.* iii. pt. ii. p. 624, pl. cvi. (1785) [♀ ad.]; *id. Gen. Hist. B.* x. p. 452, pl. cxxxiv. (1824).
- Black-bellied Darter, var. B, Black Darter, *Lath. Gen. Syn.* iii. pt. ii. p. 625 (1785) [♂ ad.].
- Plotus tupinambis*, *Bonnat. Tabl. Encycl. Méth.* i. p. 40 (1790).
- Plotus melanogaster*, *Wilson (nec Gmel.), Amer. Orn.* ix. p. 79, pl. 74, figs. 1, 2 (1814); *Vieill. Gal. Ois.* p. 196, pl. 278 (1825); *Lesson, Traité d'Orn.* p. 509 (1831); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 131 (1826).
- Plotus leucogaster*, *Vieill. N. Dict. d'Hist. Nat.* i. p. 545 (1816) [Florida].
- Black Darter, *Lath. Gen. Hist. B.* x. p. 454 (1824).
- Black-bellied Darter, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. pl. 15 (1826).
- Anhinga anhinga, *Ridgw. Man. N. A. B.* p. 77 (1887); *Lloyd, Auk,* iv. p. 184 (1887) [W. Texas]; *Cory, Auk,* v. p. 71 (1888) [Cuba]; *Chapman, Auk,* v. p. 268 (1888) [Gainesville, Florida]; *Scott, Auk,* v. p. 377 (1888) [Tarpon Springs Florida breeding March to July]; *Pindar, Auk,* vi. p. 312 (1889) [Fulton Co., Kentucky]; *Goss, Tr. Kansas Acad. Sci.* xi. pp. 58-59 (1889) [Kansas: habits]; *Cory, B. W. Ind.* p. 272 (1889); *Brewst. & Chapm. Auk,* viii. p. 137 (1891) [Suwanee R.]; *Bryant, Zee,* ii. p. 49 (1891) [habits. Tepic & Mazatlan R., Mexico]; *Scott, Auk,* ix. p. 211 (1892) [Caloosahatchie Reg., Florida]; *Attwater, Auk,* ix. p. 231 (1892) [San Antonio, Texas]; *Cory, Cat. W. Ind. B.* p. 84 (1892); *Wayne, Auk,* xii. p. 364 (1895) [Ancilla R., Florida: breeding]; *A. O. U. Check-l.* p. 41 (1895).

*Adult male in breeding-plumage.* Head, neck, middle of upper back, rump, upper tail-coverts, and underparts black, glossed with oil-green; the feathers down the upper half of the back of the neck considerably elongate and forming a mane; down each side of the mane and along the middle of the head are lines of loosely-webbed brownish-white feathers, these are apparently retained only for a very short period; the sides of the upper back, wing-coverts, scapulars, and innermost secondaries black with white middles; the scapulars are falciform and but moderately elongate, the longest measuring less than 5 inches; greater secondary coverts mostly silvery white, only the inner half of the inner web being black; the outer webs of the innermost secondaries slightly, and of the middle tail-feathers strongly ribbed; rest of the quills black; tail-feathers black, shading into dark brown on the subterminal part and rather widely tipped with brownish white. This

character alone serves to distinguish the present species from any of the allied forms. Tail composed of 12 feathers. Iris bright carmine; upper mandible dusky olive, the edges yellow; lower mandible bright yellow, the edges and tip greenish; bare space round the eye bluish green; gular sac bright orange; tarsi and toes dusky olive anteriorly, the hind parts and webs yellow; claws brownish black. Total length about 36 inches, culmen from feathers on forehead 3.15-3.6, wing 13-13.8, tail 9.5-10.5, tarsus 1.5, outer toe and claw 2.9.

*Adult male in non-breeding plumage.* Similar to the above, but lacking the elongate black and brownish-white feathers on the head and neck.

*Adult female in breeding-plumage.* Top of the head and back of the neck brown, all the feathers fringed with whitish or rufous buff, producing a somewhat mottled appearance; sides of the head, throat, and underpart of the neck and chest pale whitish buff, becoming richer on the chest; head and sides of the neck with irregular scattered bands of loosely-webbed dirty white feathers; upper back black, each feather margined with brown and with a white middle; rest of the upper parts much like those of the male; a narrow band of dark chestnut divides the chest from the black breast and underparts. Iris paler red (pinkish); rest of soft parts like those of the male. Total length about 36 inches, culmen from feathers on forehead 2.9-3.3, wing 12.5-13.5, tail 9-10.2, tarsus 1.5-1.6, outer toe and claw 2.8-2.9.

*Adult female in non-breeding plumage.* Similar to the above, but the whitish feathers on the head and sides of the neck are absent.

*Immature males and females* appear to resemble one another in the early stages, the plumage being generally like that of the adult female, but the upper parts are browner, the wide white stripes down the middle of the innermost secondaries rudimentary; the primary and secondary quills margined with whitish at the extremity, the ribs on the innermost secondaries and middle pair of tail-feathers merely indicated; the dark chestnut band at the base of the chest absent, and the breast and rest of underparts pale brownish white.

*Young in down* entirely covered with pale buff-coloured down, shading into white on the scapulars, wings, and lower parts of the body.

*Hab.* Tropical and subtropical America.

|                            |                                                           |                              |
|----------------------------|-----------------------------------------------------------|------------------------------|
| a. ♂ ad. sk.               | North America.                                            | Hardwicke Bequest.           |
| b. ♀ ad. sk.               | North America ( <i>H. W. Henshaw</i> ).                   | Salvin-Godman Coll.          |
| c, d. ♀ ad. et<br>imm. sk. | Florida.                                                  | W. B. Dismore, Esq.<br>[P.]. |
| e. ♀ imm. sk.              | St. John's River, Fla., Jan.<br>( <i>C. J. Maynard</i> ). | Salvin-Godman Coll.          |
| f. ♀ ad. sk.               | Hernando Co., Fla., Mar. 14<br>( <i>Greene Smith</i> ).   | Salvin-Godman Coll.          |
| g. ♂ imm. sk.              | Oklawaha River, Fla., April<br>( <i>C. H. Merriam</i> ).  | Salvin-Godman Coll.          |

|                                           |                                                                             |                                                   |
|-------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------|
| <i>h-o.</i> ♂ ♀ ad.,<br>imm. et pull. sk. | Tarpon Springs, Fla., Jan., Mar.,<br>Aug., Sept. ( <i>W. E. D. Scott</i> ). | Salvin-Godman Coll.                               |
| <i>p.</i> ♀ ad. sk.                       | Okahumkee, Fla., April 19<br>( <i>C. H. M.</i> ).                           | Salvin-Godman Coll.                               |
| <i>q-x.</i> ♂ ♀ ad. et<br>imm. sk.        | Brownsville, Texas, Mar.-May<br>( <i>F. B. Armstrong</i> ).                 | Salvin-Godman Coll.                               |
| <i>y.</i> ♀ juv. sk.                      | Tampico, Mexico, March<br>( <i>W. B. Richardson</i> ).                      | Salvin-Godman Coll.                               |
| <i>z.</i> ♀ ad. sk.                       | Jalapa, Mexico ( <i>de Oca</i> ).                                           | Salvin-Godman Coll.                               |
| <i>z'</i> . Imm. sk.                      | Yzabal, Guatemala, Sept.<br>( <i>O. S.</i> ).                               | Salvin-Godman Coll.                               |
| <i>b'</i> . Juv. sk.                      | Lake of Peten, Guatemala,<br>April ( <i>O. S.</i> ).                        | Salvin-Godman Coll.                               |
| <i>c', d'</i> . ♀ ad. et<br>imm. sk.      | Cozumel I., Yucatan ( <i>G. F.</i><br><i>Gaumer</i> ).                      | Salvin-Godman Coll.                               |
| <i>e', f'</i> . ♂ ♀ ad.<br>sk.            | Nicoya, Costa Rica, March<br>( <i>E. Arcé</i> ).                            | Salvin-Godman Coll.                               |
| <i>g', h'</i> . ♂ ♀ ad. sk.               | Laguna de Castillo, Veragua<br>( <i>E. Arcé</i> ).                          | Salvin-Godman Coll.                               |
| <i>i'</i> . Imm. sk.                      | South America.                                                              | Purchased.                                        |
| <i>k'</i> . ♂ ad. sk.                     | Remedios, Antioquia, U. S.<br>Colombia ( <i>T. K. Salmon</i> ).             | Salvin-Godman Coll.                               |
| <i>l.</i> ♀ ad. sk.                       | R. Napo, Ecuador ( <i>C. Buckley</i> ).                                     | Salvin-Godman Coll.                               |
| <i>m'</i> . ♂ ad. sk.                     | Sarayacu, Ecuador ( <i>C. B.</i> ).                                         | Salvin-Godman Coll.                               |
| <i>n', o'</i> . ♂ ♀ vix<br>ad. sk.        | Rupurumi R., Brit. Guiana,<br>Feb., March ( <i>H. Whiteley</i> ).           | Salvin-Godman Coll.                               |
| <i>p'</i> . ♂ imm. sk.                    | Interior of British Guiana.                                                 | J. J. Quelch & F. V.<br>McConnell, Esqs.<br>[P.]. |
| <i>q'</i> . ♀ imm. sk.                    | Georgetown, July 11.                                                        | F. V. McConnell,<br>Esq. [P.].                    |
| <i>r'</i> . ♂ vix ad. sk.                 | Essequibo River, March 8                                                    | F. V. McConnell,<br>Esq. [P.].                    |
| <i>s'</i> . Ad. st.                       | Cayenne.                                                                    | H. C. Rothery Esq.<br>[P.].                       |
| <i>t'</i> . Juv. sk.                      | Brazil.                                                                     | M. Claussen [P.]                                  |
| <i>u'</i> . ♀ ad. sk.                     | Caicara, Central Brazil, Nov. 11<br>( <i>J. Natterer</i> ).                 | Salvin-Godman Coll.                               |
| <i>v'</i> . Juv. sk.                      | Corrientes, Rio Parana, Sept.                                               | H. Durnford, Esq.<br>[C].                         |
| <i>w'</i> . Skeleton.                     |                                                                             | Seebohm Coll.                                     |

## Family II. SULIDÆ.

Palatines fused in the middle line, with a slight median keel ; a well-marked nasal hinge ; postorbital process emarginate. Greater part of the carina sterni and the region of the sternum bearing the coracoid grooves produced far forward beyond the anterior lateral process of sternum (*W. P. Pycraft*).

## 1. SULA.\*

|                                                                                               | Type.                |
|-----------------------------------------------------------------------------------------------|----------------------|
| <i>Sula</i> , <i>Brisson</i> , <i>Orn.</i> vi. p. 494 (1760); <i>Lacépède</i> in <i>Buff.</i> |                      |
| <i>Hist. Nat.</i> (18mo, Didot), <i>Quadr.</i> xiv. p. 318 (1799) ..                          | <i>S. sula</i> .     |
| <i>Dysporus</i> , <i>Illiger</i> , <i>Prodromus</i> , p. 279 (1811).....                      | <i>S. bassana</i> .  |
| <i>Plaucus</i> , <i>Rafinesque</i> , <i>Analyse</i> , p. 69 (1815); <i>Reichenb. Av.</i>      |                      |
| <i>Syst. Nat.</i> p. vi (1850) .....                                                          | <i>S. bassana</i> .  |
| <i>Sularius</i> , <i>Rafinesque</i> , <i>Analyse</i> , p. 72 (1815) .....                     | <i>S. sula</i> .     |
| <i>Moris</i> , <i>Leach</i> , <i>Syst. Cat. Mamm. &amp; B. Brit. Mus.</i> p. 35               |                      |
| (1816).....                                                                                   | <i>S. bassana</i> .  |
| <i>Morus</i> , <i>Vieill. N. Dict. d'Hist. Nat.</i> xii. p. 35 (1817) ....                    | <i>S. sula</i> .     |
| <i>Disporus</i> , <i>Agassiz</i> , <i>Index Univers.</i> p. 127 (1846) .....                  | <i>S. bassana</i> .  |
| <i>Piscatrix</i> , <i>Reichenb. Av. Syst. Nat.</i> p. vi (1850) .....                         | <i>S. piscator</i> . |
| <i>Abeltera</i> , <i>Heine</i> , in <i>Heine &amp; Reichen. Nomencl. Mus.</i>                 |                      |
| <i>Hein.</i> p. 351 (1890).....                                                               | <i>S. sula</i> .     |

Bill stout, subcylindrical, and pointed, tapering gradually towards the extremity, which is very slightly curved but never hooked ; a linear groove on each side of the culmen ; nostrils completely closed in adults ; cutting-edges of mandibles serrated, that of the upper mandible deeply cleft at the junction of the maxilla with the quadrato-jugal bar ; chin and upper part of throat more or less naked. Wings very long and pointed, the first primary longest. Tail long and wedge-shaped, composed of from twelve to eighteen feathers. Tarsus short ; outer and middle toes subequal ; claws curved, that of middle toe broad and pectinate.

*Range.* Temperate and Tropical seas.

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\* The following papers refer to the osteology, etc., of the genus:—Owen & Yarrell, *P. Z. S.* 1831, p. 90 [air-cells in *S. bassana*]; Brandt, *Mém. Ac. St. Pétersb.* (6) v. pt. ii. pp. 104, 139, 181, pl. vi. (1839) [osteology of *S. sula*]; Nitzsch, *Pteryl.*, Engl. ed. p. 150, pl. x. figs. 8, 9 (1867); Epton, *Osteol. Av.* p. 220, pl. 6 L. (1867); Mivart, *Tr. Z. S.* x. pt. vii. pp. 315–378, pls. lix. fig. 7, lx. figs. 1–5 (1878) [axial skeleton]; Shufeldt, *P. U. S. Nat. Mus.* x. p. 382 (1887); Bignon, *C. R. Soc. Biol.* 1889, pp. 93–94 [air-cavities in *S. bassana*].



## Key to the Species.

- I Feathering on the throat short not extending forward in a fainter point between the root of an mandible as far as the notch in the upper mandible is a naked nasal frown the middle of the throat.
- A Plumage mostly white, head and neck washed with brownish buff. (Subula)
- a. Naked band on throat about 1 inch in length and not continued down the fore-neck.
- ♂ All the tail-feathers pure white. *leucurus*, p. 436.
- ♂ Two middle pairs of tail-feathers inner dark four outer pairs white. *corvator*, p. 438.
- b. Naked band on throat continued down the middle of the fore-neck and nearly 6 inches in length. *cyaneus*, p. 439.
- B. Plumage mostly dark brown, each feather with a white spot at the extremity. (Immature)
- c. Naked band on throat about 2 inches in length and not continued down the fore-neck. *leucurus*, p. 436.
- d. Naked band on throat continued down the middle of the fore-neck and about 6 inches in length. *corvator*, p. 438.
- II Feathering on the throat truncate and with an entire margin, falling far short of the notch in the upper mandible.
- C. Plumage of the upper parts, as well as the head and neck, mostly pure white.
- a. Tail mostly brownish black; outer webs of flight-feathers brownish black.
- c. Bill pale greenish or bluish horn. *cyanops* ad., p. 430.
- d. Bill red. *variegata* ad., p. 434.
- f. Tail pure white, outer webs of flight-feathers hoary grey. *picator* ad., p. 432.
- D. Plumage of the upper parts dark brown, the feathers of the back and scapulars shading into whitish at the extremity.
- g. Feathers of the head and upper neck narrow and pointed, brown on the basal two-thirds, white along the middle and at the tip; wing-coverts uniform dark brown. *nebouri* ad., p. 435.
- h. Feathers of the head and neck rounded and pure white, like those of the underparts; wing-coverts dark brown, fringed with white at the extremity like those of the back. *variegata* imm., p. 434.
- E. Plumage of the upper parts uniform deep sooty brown.
- i. Head and upper half of neck sooty-brown. *cyanops* imm., p. 430.
- A. Head, neck, and chest uniform deep sooty brown, like the back.
- e. Breast and belly pure white. *suba* ♂ ♀ ad., p. 436.  
*breivateri* ♀ ad., p. 440.

- f*. Breast and belly pale brown.  
*a*'. Outer webs of flight-feathers washed with hoary grey..... *piscator* imm., p. 432.  
*b*'. Outer webs of flight-feathers dark brown ..... *sula* imm., p. 436.  
*l*. Head white, shading into grey on the neck ..... *brewsteri* ♂ ad., p. 440.

1. *Sula bassana*.

- Le Grand Fou*, *Brisson, Orn.* vi. p. 497 (1760) [Florida, immature]; *Buff. Hist. Nat. Ois.* viii. p. 372 (1781).  
*Le Fou de Bassan*, *Brisson, Orn.* vi. p. 503, pl. xliv. (1760) [Bass Rock: adult]; *D'Aubent. Pl. Enl.* ix. pl. 78 [no. 278].  
*Pelecanus bassanus*, *Linn. S. N.* i. p. 217 (1766); *Gmel. S. N.* i. pt. ii. p. 577 (1788); *Lath. Ind. Orn.* ii. p. 891 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 48, pl. 15. fig. 4 (1790); *Brock, etc. Teutsche Orn.* pl. 118 (1800-1837); *Cuv. Règn. Anim., Ois.* p. 526 (1817).  
*Le Fou tacheté de Cayenne*, *D'Aubent. Pl. Enl.* ix. pl. 77 [no. 986].  
*Le Fou tacheté*, *Buff. Hist. Nat. Ois.* viii. p. 375 (1781).  
*Le Fou de Bassan*, *Buff. Hist. Nat. Ois.* viii. p. 376 (1781).  
*Gannet*, *Lath. Gen. Syn.* iii. pt. ii. p. 608 (1785); *Pennant, Arct. Zool.* ii. p. 582 (1785); *Yarrell, Hist. Brit. B.* iii. p. 381 (1843); *Thomps. Nat. Hist. Irel.* iii. pp. 254, 451 (1851); *Watters, N. Hist. B. Irel.* p. 238 (1853).  
*Spotted Booby*, *Lath. Gen. Syn.* iii. pt. ii. p. 614 (1785).  
*Pelecanus maculatus*, *Gmel. S. N.* i. pt. ii. p. 579 (1788); *Bonnat. Tabl. Encycl. Méth.* i. p. 49, pl. 16. fig. 1 (1790).  
*Sula vulgaris*, *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 318; *Ois.* xvi. p. 294 (1799).  
*Sula major*, *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 318, *Ois.* xvi. p. 298 (1799); *Brehm, Handb. Vög. Deutschl.* p. 812 (1831).  
*Sula maculata*, *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 319, *Ois.* xvi. p. 302 (1799); *Werner, Atl. Ois. Eur., Ord.* 15, pl. 91 (1828); *Lesson, Traité d'Orn.* p. 600, pl. 116. fig. 2 (1831); *Schinz, Nat. Abbild. Vög.* p. 385, pl. 33. fig. (1833); *Harcourt, Sketch of Madeira*, p. 167 (1851); *Gray, B. West Scott.* pp. 458, 514 (1871).  
*Sula bassana*, *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 319, *Ois.* xvi. p. 303 (1799); *Pallas, Zoogr. Rosso-As.* ii. p. 306 (1811); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 100 (1826); *Brehm, Handb. Vög. Deutschl.* p. 813 (1831); *Nutt. Man. Orn.* p. 495 (1834); *Nilss. Skand. Faun.* ii. p. 472 (1835); *Gould, B. Eur.* v. pl. 412 (1837); *Aud. Orn. Biog.* iv. p. 222, pl. 326 (1838); *id. B. Amer.* vii. p. 203, pl. 425 (1839); *Körner, Skand. Fogl.* pl. 59. fig. a (1839-46); *Temm. Man. d'Orn.* ii. p. 569 (1840); *G. R. Gray, List of B.* pt. iii. p. 182 (1844); *id. Gen. B.* iii. p. 666 (1845); *Degl. Orn. Europ.* ii. p. 383 (1849); *Reichenb. Natatores*, pl. xxix. nos. 356-361 (1850); *Macgill. Br. B.* v. p. 405, fig. 86 (1852); *Kjærboll. Danm. Fugle*, p. 392, pl. li. b, *Suppl.* pl. 34. (1852); *Bonap. Conspect. Av.* ii. p. 165 (1855); *Hartl. Syst. Orn. W.-Afr.* p. 258 (1857); *Baird, B. N. Amer.* p. 871 (1860); *Bryant, P. Bost. Soc.* viii. p. 68 (1861) [Gulf of Saint Lawrence: breeding]; *Reinhardt, Ibis*, 1861, p. 19 [Greenland: accidental and rare]; *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 37 (1863); *Cunningham, Ibis*, 1866, pp. 1-23, pl. 1 [pull.]; *Drake, Ibis*, 1867, p. 430, [E. Morocco]; *Degl. & Gerbe, Orn. Europ.* ii. p. 347 (1867);

- Smith, Ibis*, 1868, p. 458 [Portugal]; *Elces, Ibis*, 1869, pp. 23-30 [Stack I., Orkney; Boreray, St. Kilda, breeding]; *Droste, J. f. O.* 1869, p. 388 [Faroes]; *Fritsch, Nat. Vog. Europa's*, p. 449 (1870), *Atl.* pl. 57. fig. 6 (1871); *G. R. Gray, Hand-l. B.* iii. p. 126 (1871); *Saunders, Ibis*, 1871, p. 398 [S. Spain]; *Munnigerode, J. f. O.* 1871, p. 78 [Hanover]; *Coues, Key N. Amer. B.* p. 296 (1872); *Cordeaur, Ibis*, 1875, p. 187 [Heligoland]; *Irby, Orn. Gibraltar*, p. 207 (1875); *Hume, Str. F.* v. p. 306 (1877); *Kumlien, Bull. U.S. Nat. Mus.* xv. p. 94 (1879) [Nova Scotia, Labrador]; *Dresser, B. Europe*, vi. p. 181, pl. 392 (1880); *Maynard, B. E. N. Amer.* p. 463 (1881); *Giglioli, Ibis*, 1881, p. 216 [Italy]; *Booth, Rough Notes*, iii. pt. v. pls. 1-6 (1883); *Irby, Ibis*, 1883, p. 190 [Santander]; *Chapman, Ibis*, 1884, p. 98 [Trafalgar]; *Coues, Key N. Amer. B.* p. 720 (1884); *Barrington, Zool.* 1884, pp. 473-9 [Ireland, breeding]; *Usher, Zool.* 1884, pp. 479-482 [Ireland, breeding]; *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 171 (1884); *Seebohm, Hist. Brit. B.* iii. p. 643 (1885); *Dixon, Ibis*, 1885, p. 91; *Reud, Ibis*, 1885, p. 240 [Gibraltar Straits]; *Gigl. Avif. Ital.* p. 274 (1886); *Grondal, Orn.* 1886, p. 360 [Iceland]; *Winge, Orn.* 1886, p. 590, 1890, p. 378 [Denmark]; *Salvad. Ucc. Ital.* p. 273 (1887); *Ridgw. Man. N. A. B.* p. 76 (1887); *Tait, Ibis*, 1887, p. 314 [Portugal]; *Lucas, Auk*, v. pp. 130-135, 278 (1888) [Gannet Rock, Gulf of Saint Lawrence]; *Gigl. Avif. Ital.* pt. i. p. 428 (1889); *Saund. Ill. Man. Brit. B.* p. 353 (1889); *Lilford, Col. Fig. Brit. B.* pt. xii. (1890); *Turtle, Ibis*, 1891, p. 8 [Blasket Is.]; *Evans, Ibis*, 1891, p. 69 [Incubation 39-45 days]; *Gutke, Heligoland*, p. 565 (1891), *Engl. ed.* p. 543 (1895); *Mende-Waldo, Ibis*, 1893, p. 198 [Canary Is.]; *A. O. U. Check-l.* p. 41 (1895); *Pearson, Ibis*, 1895, p. 247 [Iceland].
- Sula alba*, *Meyer u. Wolf, Taschenb. der Deutschl.* ii. p. 582, pl. (1810); *Temm. Man. d'Orn.* p. 593 (1815); *id. Man. d'Orn.* ii. p. 905 (1820).
- Morus bassana*, *Leach, Syst. Cat. Mamm. & B. Brit. Mus.* p. 35 (1816).
- Morus bassanus*, *Vieill. N. Dict. d'Hist. Nat.* xii. p. 39 (1817).
- Dysporus bassanus*, *Licht. Verz. Doubl.* p. 80 (1823); *Sunder. Ann. Mag. N. H.* xix. p. 236 (1847); *Tobias, J. f. O.* 1853, p. 217; *Reinhardt, J. f. O.* 1854, p. 443 [Greenland]; *Sundev. Sv. Fogl.* pl. lv. figs. 4, 5 (1856); *Sharpe, Handb. B. Gr. Brit.* ii. p. 218, pl. liii. (1896).
- Common Gannet, *Lath. Gen. Hist. B.* x. p. 432 (1824).
- Soland Gannet, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. pl. 11 (1826).
- ? *Sula leucophea*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 106 (1826) [Cayenne?].
- Sula melanura*, *Gould, B. Eur.* v. pl. 413 (1837), *Temm. Man. d'Orn.* ii. p. 569 (1840) [Iceland].
- Sula americana*, *Bonap. Comp. List*, p. 60 (1838).
- Fou intermediaire, *Lefevre, Naumannia*, 1851, pt. 4, p. 38 [Europe].
- Sula lefevrii*, *Baldamus, Naumannia*, 1851, pt. iv. p. 38 footnote; *Bonap. Consp. Ar.* ii. p. 165 (1855); *Hume, Str. F.* v. p. 306 (1877).
- Lulu* (sic) *bassana*, *Fitz. Atl. Nat. Vog.* fig. 335 (1864).

*Adult.* General colour pure white; the back and sides of the head and neck washed with ochraceous buff; primaries and primary-coverts black. A narrow bare patch extending from the chin for about two inches down the middle of the throat.

Tail composed of 12 feathers. The cutting-edges of the mandibles serrated. The inner margin of the middle toe-nail pectinate. Iris pale yellowish white; bill pale bluish grey, tinged with green at the base; bare space round the eyes, lines on the bill, and gular space black; feet brownish black, the scales light greenish blue or emerald-green; claws greyish white.

*Adult male.* Total length about 36 inches, culmen from feathers on forehead 3·95, wing 19, tail 8·8, tarsus 2·25.

*Adult female.* Total length about 36 inches, culmen from feathers on forehead 3·85, wing 18·8, tail 8·7, tarsus 2·25.

*Young when first hatched* are naked and of a slaty-black colour; iris dark hazel; naked skin round the eye livid slate-colour; bill dull slate, white at the point. Subsequently they become entirely covered with white down.

*Young in first plumage.* Head, neck, upper parts, wings, and tail, as well as the under wing- and under tail-coverts, sooty brown, each feather except the quills with a triangular white spot at the tip; the longer upper tail-coverts mostly white on the outer web, and the shafts of the tail-feathers whitish; breast, belly, and rest of underparts mottled with white and brownish grey, each feather being white with a greyish-white extremity. Cutting-edges of the mandibles and the inner margin of the middle toe-nail entire.

Gradually the head, neck, and underparts become mostly white, while the upper parts remain smoky-brown, indistinctly spotted with white at the extremity. As age advances, the brown plumage of the upper parts is gradually replaced by white.

According to Booth, who kept a number of these birds in confinement, making careful notes on their changes of plumage, the fully adult dress is not attained until the sixth year. On the other hand, Macgillivray asserts that the adult plumage is attained by the end of the second autumn.

It is not unlikely that the natural changes of plumage are retarded, or even arrested, in these birds when kept in confinement. This is certainly the case in the birds of prey, and I am inclined to believe that in a wild state the Gannet attains its fully adult plumage by the end of the third year. All the changes as observed by Booth are beautifully figured in his 'Rough Notes,' iii. pt. v. pls. i.-vi.

*Hab.* Coasts of the North Atlantic, extending south in winter to the Gulf of Mexico, and to North Africa, Madeira, and the Canary Islands.

|                                     |                                        |                               |
|-------------------------------------|----------------------------------------|-------------------------------|
| <i>a.</i> Ad. sk.                   | Great Britain.                         | Hardwicke Bequest.            |
| <i>b.</i> ♀ ad. sk.                 | Great Britain.                         | Leach Coll.                   |
| <i>c.</i> Imm. sk.                  | Great Britain.                         | Bullock Coll.                 |
| <i>d.</i> Ad. st.                   | Shetland.                              | Old Coll.                     |
| <i>e-g.</i> Ad. sk. et st.          | St. Kilda.                             | Theodore Walker,<br>Esq. [P.] |
| <i>h.</i> Ad. st.                   | Kintyre, Argyll, Scotland,<br>April 8. | Duke of Argyll [P.]           |
| <i>i-n.</i> ♂ ♀ ad. et<br>pull. st. | Bass Rock.                             | E. Bidwell, Esq. [P.]         |
| <i>o.</i> Ad. sk.                   | Bass Rock, May.                        | Hargitt Coll.                 |

|                                      |                                    |                             |
|--------------------------------------|------------------------------------|-----------------------------|
| p-r. ♂ ♀ ad. sk.                     | Bass Rock, Aug. 26.                | J. L. Bonhote, Esq.<br>[P.] |
| s-v. Ad., imm., juv.<br>et pull. sk. | Bass Rock, July.                   | Baron A. von Hügel<br>[P.]  |
| w. Pull. sk.                         | [Bass Rock.]                       | Purchased.                  |
| x. Pull. sk.                         | [Bass Rock.]                       | Gould Coll.                 |
| y. Ad. sk.                           | Lancashire Coast (J. W.<br>Lloyd). | Seebohm Coll.               |
| z, a'. Ad. et juv. sk.               | Devonshire.                        | Montagu Coll.               |
| b'. Ad. sk.                          | Pagham Harbour, Sussex.            | Shelley Coll.               |
| c'. Ad. sk.                          | Rye, Sussex, Nov. 9.               | Seebohm Coll.               |
| d'. Juv. st.                         | Yarmouth.                          | Old Coll.                   |
| e'. Ad. sk.                          | Norfolk Coast (J. H.<br>Gurney).   | Hume Coll.                  |
| f'. Ad. sk.                          | Farne Islands.                     | Hume Coll.                  |
| g'. Pull. st.                        | No locality.                       | Old Coll.                   |
| h'. Skeleton.                        | Great Britain.                     | Purchased.                  |
| i'. Skeleton.                        | Great Britain.                     | Seebohm Coll.               |
| k'. Sternum.                         | Great Britain.                     | Zool. Soc. Coll.            |
| l'. Skeleton<br>(mounted).           | Kintyre, Argyll, Scotland.         | Duke of Argyll [P.]         |
| m'. ♂ ad. skeleton.                  | Kintyre, April 8.                  | Duke of Argyll [P.]         |
| n'. Sternum.                         | Europe.                            | Lefèvre Coll.               |

## 2. *Sula serrator*.

*Sula australis*, Gould (nec Steph.), *P. Z. S.* 1840, p. 177 [Tasmanian seas]; *G. R. Gray in Dieff. Trav. N. Zeal.* ii. *App.* p. 200 (1843); *id. List of B.* pt. iii. p. 183 (1844); *Gould, B. Austr.* vii. pl. 76 (1846); *Reichenb. Natatores*, pl. xxix<sup>e</sup> nos. 2287-8 (1850); *Ellman, Zool.* 1861, p. 7472; *Layard, Ibis*, 1863, p. 246 [habits]; *Gould, Handb. B. Austr.* ii. p. 504 (1865).

*Sula serrator*, *G. R. Gray, Voy. Erebus and Terror, Birds*, p. 19 (1845), *Bonap. Consp. Av.* ii. p. 106 (1855), *G. R. Gray, Ibis*, 1862, p. 250 [New Zealand: part syn.]; *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 38 (1863); *Hutton, Ibis*, 1870, p. 396 [New Zealand]; *G. R. Gray, Hand-l. B.* iii. p. 126 (1871); *Buller, B. N. Zeal* p. 323 (1873), *Hume, Str. F.* v. p. 306 (1877); *Ramsay, P. Linn. Soc. N. S. W.* ii. p. 203 (1877); *id. Tab. List Austr. B.* p. 24 (1888); *North, Nests & Eggs B. Austr.* p. 363 (1889).

*Pelecanus serrator*, *Banks, Icon. ined.* pl. 30 (fide *G. R. Gray*).

*Sula plumigula*, *J. Natterer*: fide *Pelz. Ibis*, 1873, p. 52 [Australia].

*Dysporus serrator*, *Finsch, J. f. O.* 1874, pp. 174, 213 [New Zealand, Australia]; *Buller, Man. B. N. Zeal.* p. 91 (1882); *id. B. N. Zeal.* 2nd ed. ii. p. 177 (1888); *McLean, Ibis*, 1892, p. 254 [N. Zealand: lay only one egg].

*Adult.* Very similar to *S. bassana*, and, as in that species, the naked band down the middle of the throat is short, extending for about two inches only. It may, however, be at once distinguished by having the two middle pairs of tail-feathers dark brownish black. Tail composed of 12 feathers. Iris olive-white; bill brownish horn-colour, slightly tinged with blue; space round the eye leaden-blue; bare skin at the base of the bill and down to the middle of the throat nearly black; front of tarsi and toes sickly greenish yellow; webs brown. Total length about 36 inches, culmen from feathers on forehead 3.4-3.6, wing 18, tail 8-8.4, tarsus 2.2.

*Immature.* Closely resembles the young of *S. bassana* of a similar age.

*Hab.* Coasts of Australia and New Zealand.

|                              |                  |                                   |
|------------------------------|------------------|-----------------------------------|
| <i>a, b.</i> Ad. sk.         | Queensland.      | Salvin-Godman Coll.               |
| <i>c, d.</i> Imm. sk.        | New South Wales. | Australian Museum [P.].           |
| <i>e, f.</i> Ad. et imm. st. | Port Jackson.    | Australian Museum [P.].           |
| <i>g.</i> Ad. sk.            | Tasmania.        | J. B. Jukes, Esq. [P.].           |
| <i>h.</i> Ad. sk.            | New Zealand.     | Colonial Museum, Wellington [E.]. |
| <i>i, k.</i> Ad. sk.         | New Zealand.     | Sir E. Home [P.].                 |
| <i>l.</i> Ad. sk.            | New Zealand.     | Antarctic Exped.                  |
| <i>m.</i> Ad. sk.            | Cook's Straits.  | Hume Coll.                        |
| <i>n.</i> Skull.             |                  |                                   |
| <i>o.</i> Head in spirits.   | New Zealand.     | Sir W. L. Buller [P.].            |

### 3. *Sula capensis*.

*Dysporus capensis*, *Licht. Verz. Doubl.* p. 83 (1823); *Finsch & Hartl. Vög. Ost-Afr.* p. 842 (1870) [Mosambique]; *Sunder. Ann. Mag. N. H.* xix. p. 236 (1847).

*Sula melanura*\*, *Macgill. Br. B.* v. p. 419 (1852) [Bass Rock!].

*Sula capensis*, *G. R. Gray, List of B.* pt. iii. p. 183 (1844); *Reichenb. Natatores*, pl. xxix.<sup>o</sup> no. 2292-3 (1850); *Bonap. Consp. Av.* ii. p. 165 (1855); *Cassin, U.S. Expl. Exped.* p. 365 (1858); *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 39 (1863); *Layard. B. S. Afr.* p. 379 (1867); *G. R. Gray, Hand-l. B.* iii. p. 126 (1871); *Gurney, ed. Anderss. B. Damaral.* p. 365 (1872); *Shelley, Ibis*, 1875, p. 87 [Cape to Port Elizabeth]; *Bocage, J. f. O.* 1876, p. 292 [Loanda]; *Hume, Str. F.* v. p. 306 (1877); *Reichenow, J. f. O.* 1877, p. 10 [Loango Coast]; *Bocage, Orn. Angola*, p. 520 (1881); *Sharpe's ed. Layard, B. S. Afr.* p. 775 (1884); *Fischer, J. f. O.* 1885, p. 114 [Zanzibar]; *Reichenow, Vög. Deutsch-O.-Afr.* p. 24 (1894) [Zanzibar]; *W. L. Sclater, Ibis*, 1896, p. 523 [Dassen I.].

*Adult.* Very similar to *S. bassana*, but easily distinguished by the greater length of the bare patch, which extends down the middle of the throat and foreneck for about 6 inches, and by the colour of the tail-feathers, which are brownish black instead of pure white. Tail composed of 12 feathers. Iris pale yellow; naked skin on the sides of the face and down the middle of the throat bluish black; feet livid. Total length about 31 inches, culmen from feathers on forehead 3.5, wing 18-18.3, tail 7.5, tarsus 2.35.

*An immature bird* with the head and neck like those of the adult, and the rest of the upper parts smoky brown mixed with white, especially on the upper back, has the chest and rest of underparts white, each feather with a pale brown middle and submarginal band, producing a mottled appearance.

*Hab.* Coasts of South Africa, ranging north to Loango on the west, and Zanzibar on the east.

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\* There can be no doubt that the bird described is *S. capensis*: possibly a mistake may have been made in the locality or the label have been accidentally changed.

|               |                                  |                            |
|---------------|----------------------------------|----------------------------|
| a. Ad. sk.    | Ambroz, Angola.                  | J. J. Monteiro, Esq. [C.]. |
| b. ♂ imm. sk. | Mossamedes, March<br>(Anchieta). | Shelley Coll.              |
| c. Ad. sk.    | Cape of Good Hope.               | Purchased.                 |

4. *Sula cyanops*.

*Pelecanus piscator*, Forst. (nec Linn.) *Icon. ined.* pl. 107 [Norfolk I., 9th Oct. 1774].

? Brown and White Booby, Lath. *Gen. Hist. B.* x. p. 441 (1824).

\* *Sula dactylatra*, Less. *Voy. Coquille*, i. p. 494 (1826) [Ascension]; *id. Traité d'Orn.* p. 601 (1831); Bonap. *Consp. Av.* ii. p. 165 (1855); Hume, *Str. F.* v. p. 311 (1877); Cory, *B. Bahama Is.* p. 194 (1880); Milne-Edwards, *Ann. Sci. Nat.* (6) xiii. Art. 4, p. 85, pl. 13 (1882).

*Dysporus cyanops*, Sundevall, *Phylogr. Sällskapet Tidsk.* i. p. 218, pl. v. (1837); *id. Ann. Mag. N. H.* xix. p. 236 (1847); Finch & Hartl. *Beitr. Faun. Centralpolynes.* p. 252 (1867); *id. Vög. Ost-Afr.* p. 843 (1870); *Sunder. P. Z. S.* 1871, p. 125 [Galapagos]; *Finch, Ibis*, 1880, p. 434 [Gilbert Is.]; Oates, *B. Burmah*, ii. p. 231 (1883).

*Sula personata*, Gould, *P. Z. S.* 1846, p. 21 [N. & N.E. coasts of Australia]; *id. B. Austr.* vii. pl. 77 (1846); Reichenb. *Natatores*, pl. xxix.<sup>c</sup> no. 2291 (1850); Cassin, *U.S. Expl. Exped.* p. 368 (1858); *Crowfoot, Ibis*, 1885, p. 269 [Nepean & Philip Is., breeds].

*Sula cyanops*, Bonap. *Consp. Av.* ii. p. 166 (1855); Schl. Mus. *Paya-Bas*, vi. *Pelec.* p. 39 (1883); Gould, *Handb. B. Austr.* ii. p. 506 (1865); Shelley, *B. Egypt*, p. 294 (1872); Heugl. *Orn. N.O.-Afr.* iv. p. 1480 (1873); *Salvad. Ucc. Borneo*, p. 367 (1874); *Salvin, Tr. Z. S.* ix. p. 496 (1878); *Streets, Bull. U.S. Nat. Mus.* vii. p. 24 (1877) [Christmas I.]; *Butler, Str. F.* v. p. 303 (1877) [Mekran Coast]; *Hume, Str. F.* v. p. 307 (1877); *Masters, P. Linn. Soc. N. S. W.* i. p. 64 (1877); *Ramsay, P. Linn. Soc. N. S. W.* ii. p. 203 (1877) [East Cape], iv. p. 102 (1879) [Lousiade, Duke of York, Solomon Is.]; *Butler, Cat. B. Sind*, p. 81 (1879); *id. Str. F.* viii. p. 388 (1879) [Coast of Sind]; *Penrose, Ibis*, 1879, pp. 275, 281 [Ascension]; *Sclat. & Salv. Voy. Chall., Zool.* pt. ix. p. 120 (1880); *Legge, B. Ceylon*, iii. p. 1180 (1880); *Murray, Str. F.* x. p. 165 (1881); *Salvad. Orn. Pap.* iii. p. 416 (1882); *Salvin, P. Z. S.* 1883, p. 427 [Galapagos]; *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 176 (1884); *Cory, B. Haiti & S. Domingo*, p. 170 (1885); *Ridgw. Man. N. A. B.* p. 75 (1887); *Cory, Auk*, v. p. 71 (1888); *Ramsay, Tah. List Austr. B.* p. 24 (1888); *Cory, B. W. Ind.* p. 272 (1889); *Cheeseman, Tr. N. Z. Inst.* xxi. p. 121 (1889) [Curtis I.]; *North, Nests & Eggs B. Austr.* p. 379 (1889) [Lord Howe & Norfolk Is.]; *Etheridge & North, Lord Howe I.*, p. 16, pl. i. fig. 2; *Wiglesw. Abh. Mus. Dresd.* 1890-91, p. 72; *Lister, P. Z. S.* 1891, pp. 293, 300 [Phoenix Is.]; *Walker, Ibis*, 1892, p. 257 [Adèle I., N.W. Australia]; *Cory, Cat. W. Ind. B.* p. 84 (1892); *Rothschild, Avif. Layzan*, pt. i. p. 25 (1893); *A. O. U. Check-l.* p. 40 (1895).

*Sula nigrodactyla*, Less., *vide* Bonap. *Consp. Av.* ii. p. 165 (1855).

*Sula bassana*, Newberry (nec Linn.), *Rep. Expl. Surv.* vi. pt. iv. p. 107 (1857).

*Sula elegans*, Bryant, *P. Bost. Soc.* vii. p. 125 (1859) [Bahamas: breeding]; *Cory, B. Bahama Is.* p. 194 (1880).

\* The description of *S. dactylatra* given by Lesson is unrecognizable.



*Sula melanops*, *Heugl. Ibis*, 1859, p. 351, pl. x. figs. 2, 3 [Bur-da-Rebschi, Somali Coast].

? *Sula piscatrix*, *Hume, Str. F.* iv. p. 483 (1876) [Laccadives].

*Sula abbotti*, *Ridgw. P. U.S. Nat. Mus.* xvi. p. 599 (1893) [Assumption I., Ind. Ocean].

*Adult.* Pure white, except the primaries, secondaries and their coverts, as well as the tail-feathers, which are brownish black; the quills and coverts, however, have the basal part of the inner web mostly white, and the basal part of the tail-feathers is white. The chin and upper part of the throat entirely naked; feathers terminating in a nearly straight line across the throat. Tail composed of 16 or occasionally 18 feathers. Iris yellow; bill horn-colour, greenish grey, or greenish yellow; naked skin round the eyes and on the throat dark slate to bluish black; legs and feet slate-grey, brownish grey, bluish grey, or greenish yellow; webs darker.\* Total length about 36 inches, culmen from feathers on forehead 4.3–4.4, wing 17.5–17.8, tail 7.1–7.6, tarsus 2.3.

*Nestling* covered with white down.

*In the youngest examples* which I have examined the head, neck, and upper parts are mostly smoky brown, mixed here and there with white, or partly white feathers; between the base of the neck and upper back a rather marked zone of whitish feathers; chest, breast, and underparts pure white; under wing-coverts almost pure white, one or two of the outermost feathers mixed with brown.

*In nearly adult specimens* the lesser wing-coverts, lower back, and rump are mixed with the brown feathers of the immature; otherwise the plumage is like that of the adult. "Iris pale green; gular skin slate; bill pale bluish horn; legs and feet lavender-blue" (*E. A. Butler*).

*Hab.* Tropical seas throughout the world.

|                              |                                               |                              |
|------------------------------|-----------------------------------------------|------------------------------|
| <i>a-c.</i> Ad. et pull. sk. | Ascension I., Dec. ( <i>Dr. D. Gill</i> ).    | Dr. Frank Penrose [P.].      |
| <i>d.</i> Imm. sk.           | At sea, off the Cape of Good Hope.            | E. M. Langworthy, Esq. [P.]. |
| <i>e, f.</i> ♂ ♀ vix ad. sk. | Mekran Coast, May 14 ( <i>E. A. Butler</i> ). | Hume Coll.                   |
| <i>g.</i> Imm sk.            | Tenasserim.                                   | J. D. C. Packman, Esq. [P.]. |
| <i>h, i.</i> ♀ ad. sk.       | Raine Island, N.E. Australia.                 | 'Challenger' Exped.          |
| <i>k.</i> Ad. sk.            | Norfolk Island.                               | E. Saunders [C.].            |
| <i>l, m.</i> Ad. sk.         | Norfolk Island.                               | Seebohm Coll.                |
| <i>n.</i> Juv. sk.           | Curtis Island, Kermadec Group, Feb. 13.       | Miss E. Eastwood [P.].       |

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\* Judging from the descriptions published by various authors, the colours of the soft parts in *S. cyanops* vary greatly [*cf.* Hume, *Str. F.* v. p. 310 (1877)]. Too much importance must not, however, be attached to these differences, for after making allowance for the changes of colour caused by age, season, and sex, it must be borne in mind that some of the records are probably taken from birds some hours after death, when the colours of the gular pouch and legs are entirely altered, while some descriptions are taken from dry skins.

- o. Skeleton. Raine Island, N.E. Australia. 'Challenger' Exped.  
 p. Imm. skeleton.  
 q. Skull.  
 r. Ad. integuments. Raine Island, N.E. Australia. 'Challenger' Exped.

### 5. *Sula piscator*.

- Le Fou brun, *Briss. Orn.* vi. p. 409, pl. xliii. fig. 1 (1760).  
 Le Fou blanc, *Briss. Orn.* vi. p. 501 (1760); *Buff. Hist. Nat. Ois.* viii. p. 371 (1781).  
*Pelecanus piscator*, *Linn. S. N.* i. p. 317 (1766) [adult]; *Gmel. S. N.* i. pt. ii. p. 576 (1788); *Lath. Ind. Orn.* ii. p. 892 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 49 (1790).  
*Pelecanus fiber*, *Linn. S. N.* i. p. 218 (1766) [immature]; *Gmel. S. N.* i. pt. ii. p. 579 (1788); *Lath. Ind. Orn.* ii. p. 893 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 48, pl. 16. fig. 2 (1790).  
 Le petit Fou brun, *Buff. Hist. Nat. Ois.* viii. p. 374 (1781).  
 Lesser Gannet, *Lath. Gen. Syn.* iii. pt. ii. p. 611 (1785); *id. Gen. Hist. B. x.* p. 437 (1824).  
 Brown Booby, *Lath. Gen. Syn.* iii. pt. ii. p. 613 (1785); *id. Gen. Hist. B. x.* p. 441 (1824).  
*Morus piscator*, *Vieill. N. Dict. d'Hist. Nat.* xii. p. 40 (1817).  
*Sula candida*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 103 (1826).  
*Sula fiber*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 105 (1826).  
*Sula erythrorhyncha*, *Less. Traité d'Orn.* p. 601 (1831).  
*Sula rubripes*, *Gould, P. Z. S.* 1837, p. 156 [N. S. Wales]; *id. Syn. B. Austr.*, App. p. 7 (1837-8); *G. R. Gray, List of B.* pt. iii. p. 183 (1844).  
*Sula piscator*, *Gould, B. Austr.* vii. pl. 79 (1846); *Blyth, Cat. Mus. As. Soc.* p. 297 (1849) [Maldives & Bay of Bengal]; *Reichenb. Natatores*, pl. xxix. no. 853 (1850); *Hartl. Syst. Orn. W.-Afr.* p. 258 (1857); *Cassin, U. S. Expl. Exped.* p. 365 (1858); *Jerd. B. Ind.* iii. p. 852 (1864); *Gould, Handb. B. Austr.* ii. p. 509 (1865); *Newton, Ibis*, 1865, p. 151 [Rodriguez]; *Salmon, Ibis*, 1866, p. 200 [Half Moon Cay, Belize Coast]; *G. R. Gray, Hand-l. B.* iii. p. 126 (1871); *Ramsay, P. Linn. Soc. N. S. W.* ii. p. 203 (1877); *Streets, Bull. U. S. Nat. Mus.* vii. p. 23 (1877) [Fanning Group, Christmas I.]; *Butler, Cat. B. S. Bombay*, p. 112 (1880); *Sclat. & Salr. Voy. Chall.*, Zool. pt. ix. p. 120 (1880); *Layard, Ibis*, 1880, p. 233 [Loyalty Is.], 1881, p. 134 [N. Caledonia]; *Salvad. Orn. Pap.* iii. p. 419 (1882); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 182 (1884); *Guillem P. Z. S.* 1885, p. 417 [Silam, Borneo]; *Grandidier, Hist. Madagasc.*, Ois. p. 695 (1885); *Saunders, P. Z. S.* 1886, p. 335 [Chagos Group]; *Ridgw. Man. N. A. B.* p. 76 (1887); *Cory, Auk*, v. p. 72 (1888) [West Indies]; *Ramsay, Tab. List Austr. B.* p. 24 (1888); *Cory, B. W. Ind.* p. 273 (1889); *id. Cat. W. Ind. B.* p. 84 (1892); *A. O. U. Check-l.* p. 40 (1895).  
*Dysporus piscator*, *Sunder. Ann. Mag. N. H.* xix. p. 235 (1847); *Hartl. P. Z. S.* 1867, p. 831 [Pelew Is.]; *Finsch & Hartl. Beitr. Faun. Centralpolynes.* p. 255 (1867); *Oates, B. Burmah*, ii. p. 230 (1883).  
*Sula rubripeda*, *Peale, Zool. U. S. Expl. Exped., Birds*, p. 274 (1848).  
*Sula piscatrix*, *Reichenb. Natatores*, pl. xxix. nos. 2204-5 (1850); *G. R. Gray, Ibis*, 1862, p. 250 [N. Zealand]; *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 40 (1863); *Pollen & Van Dam, Rech. Madagasc.*

- pt. ii. p. 140 (1868); *Swinh. Ibis*, 1873, p. 231 [Hainan]; *Salvad. Ucc. Borneo*, p. 368 (1874); *Hume, Str. F.* v. p. 312 (1877); *Hartl. Vög. Madagasc.* p. 397 (1877); *Nicholson, Ibis*, 1882, p. 70 [Cocos, Keeling Is.]; *Sharpe, P. Z. S.* 1887, p. 516 [Christmas I., Indian Ocean]; *Everett, J. Str. B. As. Soc.* xx. p. 187 (1889) [Borneo]; *Seebohm, B. Jap.* p. 213 (1890); *Wiglesw. Abh. Mus. Dresd.* 1890-91, p. 72; *Lister, P. Z. S.* 1891, pp. 294, 300 [Phoenix Is.]; *Rothschild, Avif. Laysan*, pt. i. p. 27 (1893).
- Sula brasiliensis*, *Reichenb. (nec Spix) Natatores*, pl. xxix. no. 851 (1850).
- Piscatrix candida*, *Reichenb. Av. Syst. Nat.* p. vi (1852); *Bonap. Consp. Av.* ii. p. 166 (1855); *Jouan, Mém. Soc. Cherbourg*, ix. p. 241 (1863) [New Caledonia].
- Dysporus hernandezi*, *Gundl. J. f. O.* 1878, p. 298 [Cuba]; 1881, p. 401.
- Sula coryi*, *Maynard, Contr. Sci.* i. pp. 40-48, pp. 51-57, pl. v. figs. 1, 2, pp. 142-143, pl. xii. (1889) [Cayman Brac & Little Cayman]; *Cory, Cat. W. Ind. B.* p. 84 (1892).

*Adult.* General colour pure white; primaries, primary-coverts, outer webs and tips of secondaries and secondary-coverts hoary grey, inclining to blackish on the outermost quills in freshly-moulted birds, and to blackish in worn specimens. Chin and upper part of the throat naked, the feathers ending in a straight line across the throat. Tail composed of 14, or sometimes 16 feathers. Iris grey; bill greyish blue, shading into pink or reddish towards the base; naked skin round eye blue; gular pouch dark slate or black; legs and feet vermilion, red or dark pink, almost magenta.

*Adult male.* Total length about 29·5 inches, culmen from feathers on forehead 3·5, wing 15·5, tail 8·3-9·0, tarsus 1·4.

*Adult female.* Total length about 28 inches, culmen from feathers on forehead 3·2-3·45, wing 14·7-14·8, tail 8·2-8·3, tarsus 1·4.

*Immature in first plumage.* Entire plumage above and below brown, lighter on the breast and belly; primaries and secondaries and their coverts like those of the adult, but the inner webs of the secondaries black. Cutting-edges of the mandible sometimes serrated, and the inner margin of the middle claw pectinate. Bill bluish pink, the latter predominating towards the base; naked skin round eye dark leaden hue; gular pouch flesh-coloured.

*In more adult specimens* (perhaps in the plumage of the second year) the head, neck, and underparts are white; the back, wings, and tail brown as in the immature; and the middle tail-feathers dark brownish grey toward the base, shading into white toward the extremity.

*A still more adult bird* has a large amount of white or partially white feathers mixed with the brown of the back and wings.

I should imagine that the fully adult plumage is not attained until the third or perhaps the fourth year. This species may be recognized in all stages of plumage by the hoary grey appearance on the outer webs of the quills.

*Hab.* Tropical and Sub-tropical seas throughout the world, except the Pacific coast of America.

|                                  |                                                            |                             |
|----------------------------------|------------------------------------------------------------|-----------------------------|
| a. Ad. sk.                       | Krusenstern Rocks, North Pacific (O. Snow).                | Seeborn Coll.               |
| b. Juv. sk.                      | Maldon I., 25° S. of Sandwich Is. (A. Campbell).           | Seeborn Coll.               |
| c. ♂ imm. sk.                    | Howland I. (J. H. Gurney).                                 | Hume Coll.                  |
| d. Juv. sk.                      | Samoa Is.                                                  | Rev. J. B. Stair [P.].      |
| e, f. Ad. et juv. sk.            | Fijian Seas.                                               | Voyage of H.M.S. 'Herald'.  |
| g-i. Ad. et juv. sk.             | Queensland (J. T. Cockerell)                               | Salvin-Godman Coll.         |
| h. ♀ ad. sk.                     | Raine I., N.E. Australia.                                  | 'Challenger' Exped.         |
| i. ♂ imm. sk.                    | Raine I., May 29.                                          | Voyage of 'Rattlesnake.'    |
| m. ♀ imm. sk.                    | At sea off Cape York, Aug. 29.                             | 'Challenger' Exped.         |
| n. Juv. sk.                      | Ayala, Mindanao, Philippine Is., Oct. 11 (J. B. S.).       | Steere Coll.                |
| o. Imm. sk.                      | At sea off Cochin China (Michie).                          | Seeborn Coll.               |
| p. Juv. sk.                      | Sandakan, N.E. Borneo.                                     | Governor Ussher [P.].       |
| q. ♀ ad. sk.                     | Christmas I., Indian Ocean.                                | Capt. Maclear, R.N. [P.].   |
| r. ♂ juv. sk.                    | Nassau I., S. of Sumatra, August (Dr. Coppinger).          | Voyage of H.M.S. 'Alert.'   |
| s. ♂ ad. sk.                     | Diego Garcia, Indian Ocean.                                | G. C. Bourne, Esq. [P.].    |
| t-v. Imm. et juv. sk.            | Seychelles, March 18 20 (E. Dowker).                       | Hume Coll.                  |
| w-y. ♂ ad., ♀ juv., et pull. sk. | Farquhar I., August (G. Stevens).                          | Howard Saunders, Esq. [P.]. |
| z. ♀ ad. sk.                     | Rodriguez (H. H. Slater).                                  | Transit of Venus Exped.     |
| a', b'. Imm. et juv. sk.         | Mauritius (Bewsher).                                       | Shelley Coll.               |
| c'. Ad. sk.                      | I. of Trinidad, Lat. 20° 23' S., Long. 24° 43' W., Aug 20. | Earl of Crawford [P.].      |
| d'. Juv. sk.                     | Redonda I., W. I. (Spence).                                | Salvin-Godman Coll.         |
| e' ♀ juv. sk.                    | St. Vincent, W. I., Jan.                                   | G. Stephens, Esq. [C.].     |
| f'. Juv. sk.                     | Jamaica (W. Osburn).                                       | Salvin-Godman Coll.         |
| g'. Ad. sk.                      | Jamaica.                                                   | Gould Coll.                 |
| h'. Ad. sk.                      | Honduras (Dyson).                                          | Cuming Coll.                |
| i'-l' Ad, imm. et juv. sk.       | Half-Moon Key, British Honduras, May 9 (O.S.).             | Salvin-Godman Coll.         |
| m', n'. Skeletons.               | Rodriguez (H. H. Slater).                                  | Transit of Venus Exped.     |

i. f. 655

a. Sternum.

*S. fuscata nebulosa* Rth. *Sulafaga*, *Soc.*, *Claron*.

6. *Sula variegata*.*Sula* sp., Fraser, P. Z. S. 1843, p. 120 [Chili].*Dysporus variegatus*, Tschudi, Faun. Peru., Orn. p. 313 (1845); *id.* J. f. O. 1856, p. 188.*Sula cyanops*, Reichenb. *Natatores*, pl. xxix.° nos. 2289-90 (1850).*Sula variegata*, Hume, Str. F. v. p. 317 (1877); Salvin, P. Z. S. 1883, p. 427 [Peru]; Ridgw. Man. N. A. B. p. 75 (1887); Tacz Orn. Pérou, iii. p. 433 (1886); Berlepsch & Stolz. P. Z. S. 1892, p. 399 [Peru]; Lane, Ibis, 1897, p. 185 [Chili].*Adult.* Entire plumage pure white, except the primaries and

their coverts, which are brownish black, the secondaries and their coverts as well as the longer scapulars, which are dark brown except towards the base, and the outer tail-feathers, which are dark brown, the middle pairs inclining to whitish on the basal half. Tail composed of 16 feathers. Bill in dry skin red, paler towards the tips of the mandibles; naked skin round eye and on throat blackish; tarsi and feet yellowish brown. Total length about 29 inches, culmen from feathers on forehead 4.15, wing 17.3, tail 6.5, tarsus 2.

*Immature in first plumage.* Head, neck, and under tail-coverts pale sooty-grey, the feathers on the front of the forehead white; nape, rest of upper parts, and flanks dark brown, the scapulars and wing-coverts shading into whitish at the extremity; under wing-coverts like the back; axillaries, chest, and rest of underparts white. Most of the feathers of the breast with greyish-brown middles, producing a slightly mottled appearance.

*Immature* (? plumage of the second year). Head, neck, entire underparts, and scapulars pure white; back, wings, scapulars, sides of the chest, flanks, and under wing-coverts brown, each feather tipped or fringed with white, widest and most conspicuous on the scapulars. Iris light brown; base of bill, gular pouch, legs and feet light purple.

*In a nearly adult bird* (? in plumage of the third year) almost the whole of the upper and lower back and many of the lesser and median wing-coverts are pure white as in the adult. Total length about 29 inches, culmen from feathers on forehead 3.9.

*Hab.* Coasts of Chili and Peru.

|                  |                                                 |                                        |
|------------------|-------------------------------------------------|----------------------------------------|
| a. Ad. sk.       | West coast of America.                          | Capt. Kellett & Lieut. Wood, R.N. [P.] |
| b. Imm. sk.      | West coast of S. America.                       | Sir E. Belcher [P.]                    |
| c. Imm. sk.      | Coast of Peru.                                  | Rev. W. Hennah [P.]                    |
| d. Vix ad. sk.   | Callao Bay, Peru, Aug. (Admiral A. H. Markham). | Salvin-Godman Coll.                    |
| e. Juv. sk.      | San Lorenzo I., Peru (A. H. M.).                | Salvin-Godman Coll.                    |
| f. Nr. ad. sk.   | Chorillos, Peru.                                | Howard Saunders, Esq. [P.]             |
| g. ♂ imm. sk.    | Coast of Chili (E. C. Reed).                    | Salvin-Godman Coll.                    |
| h, i. ♂ imm. sk. | Coquimbo, May (Dr. Copinger).                   | Voyage of H.M.S. 'Alert.'              |
| k. Imm. sk.      | Valpariaso.                                     | Capt. Brett [P.]                       |
| l. Skeleton.     | Chili.                                          |                                        |

## 7. *Sula nebouxi*.

*Sula nebouxii*, Milne-Edwards, *Ann. Sci. Nat.* (6) xiii. art. 4, p. 37, pl. 14 (1882) [Pacific coast of America]; *Ridgw. Man. N. Am. B.* 2nd ed. p. 524 (1896).

*Sula gossi*, (*Ridgw. MS.*), Goss, *Auk*, v. p. 241 (1888) [San Pedro Martir I.]; *Reichen. & Schal. J. f. O.* 1883, p. 400; *Ridgw. P. U.S. Nat. Mus.* xii. p. 114 (1889); *Shufeldt, Auk*, vi. p. 67, (1889); *A. O. U. Check-l.* p. 40 (1895); *Brewst. etc. Auk*, xiv. p. 124 (1897).

*Adult.* Head, upper part of neck, and sides of lower neck smoky-

brown, streaked with white, each of the narrow pointed feathers having the basal two-thirds brown and the middle and terminal portion pure white; anterior part of the forehead and feathered part of the throat, behind the gular sac, nearly uniform white; base of the hind-neck, a band across the lower back, upper tail-coverts, base of fore-neck, rest of underparts, axillaries and innermost under wing-coverts white; rest of back and wings brown, each of the feathers of the back and scapulars shading into whitish at the extremity; primary-quills brownish black; secondaries brown like the wing-coverts; middle pair of tail-feathers white, shading into brown on the terminal portions of the outer webs; outer pairs mostly brown, more or less white along the basal half of the shaft. Tail composed of 16 feathers. Iris yellow; bill dull olive-blue; bare space round bill, eyes, lores, and gular sac slate-blue; legs, feet, and webs bright clear ultramarine-blue, with a slight greenish tint on webs (*N. S. Goss*).

*Adult male.* Total length about 34 inches, culmen from feathers on forehead 4.25, wing 16.1, tail 8.5, tarsus 1.9.

*Adult female.* Total length about 34 inches, culmen from feathers on forehead 4.5, wing 17.3, tail (imperfect) 7.6, tarsus 2.2.

*Hab.* Pacific coast of America, from the Gulf of California to the coast of Chili, and Galapagos Is.

- a, b. ♂ ♀ ad. sk. Tres Marias Is., W. Mexico, Salvin-Godman Coll.  
April 16 (*A. Forrer*).  
c. Ad. sk. Charles I., Galapagos, Feb. Salvin-Godman Coll.  
(*Admiral A. H. Markham*).  
d. Ad. sk. Coast of Chili. C. Crawley, Esq [P. 1.

### 8. *Sula sula*.

Booby, *Culesb. Car.* i. p. 87, pl. 87 (1731). *Lath. Gen. Hist. B.* x. p. 439 (1824).

Le Fou, *Briss. Orn.* vi. p. 495 (1760).

*Pelecanus sula*, *Linn. S. N.* i. p. 218 (1766); *Gmel. S. N.* i. pt. ii. p. 578 (1788); *Lath. Ind. Orn.* ii. p. 892 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 47, pl. 15, fig. 3 (1790); *Raffl. Tr. Linn. Soc.* xiii. p. 330 (1822) [Sumatra].

Le Fou de Cayenne, *D'Aubent. Pl. Ent.* ix. pl. 75 [no. 973].

Le Fou commun, *Buff. Hist. Nat. Ois.* viii. p. 368, pl. xxix. (1781).

Le petit Fou, *Buff. Hist. Nat. Ois.* viii. p. 374 (1781).

*Pelecanus leucogastra*, *Bodd. Tabl. Pl. Ent.* p. 57 (1783).

Common Booby, *Lath. Gen. Syn.* iii. pt. ii. p. 612 (1785).

Lesser Booby, *Lath. Gen. Syn.* iii. pt. ii. p. 614 (1785); *id. Gen. Hist. B.* x. p. 442 (1824).

*Pelecanus parvus*, *Gmel. S. N.* i. pt. ii. p. 579 (1788); *Lath. Ind. Orn.* ii. p. 893 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 48 (1790).

*Sula parva*, *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 318, *Ois.* xvi. p. 300 (1790); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 107 (1826); *Jouan, Mém. Soc. Cherbourg*, ix. p. 240 (1863) [New Caledonia]; *Hume, Str. F.* v. p. 321 (1877).

*Morus sula*, *Vieill. N. Dict. d'Hist. Nat.* xii. p. 38 (1817).

*Morus parvus*, *Vieill. N. Dict. d'Hist. Nat.* xii. p. 41 (1817).

*Sula brasiliensis*, *Spic. Ar. Bras.* ii. p. 83, pl. cvii. (1825) [Islands off Rio].

- Sula fusca*, Vieill. *Gal. Ois.* ii. p. 194, pl. 277 (1825); Nutt. *Man. Orn.* p. 500 (1834); Aud. *Orn. Biogr.* iii. p. 63, pl. 207 (1835); *id.* *B. Amer.* vii. p. 216, pl. 426 (1839); D'Orb. in *Sagra's Hist. Cuba*, p. 308 (1839); Temm. & Schl. *Faun. Jap.* p. 131 (1842); Gould, *B. Austr.* vii. pl. 78 (1846); Gosse, *B. Jamaica*, p. 417 (1847); Reichenb. *Natatores*, pl. xxix. no. 850, pl. xxix.<sup>c</sup> nos. 2296-7 (1850); Gundl. *J. f. O.* 1857, p. 238; Jones, *Nat. Bermuda*, p. 51 (1859); Taylor, *Ibis*, 1860, p. 316 [Honduras]; Gundl. *J. f. O.* 1861, p. 348 [Cuba]; Swinh. *Ibis*, 1869, p. 347 [Formosa], 1870, p. 367 [Hainan]; Ramsay, *P. Linn. Soc. N. S. W.* iv. p. 84 (1879) [Savo, Solomon Is.]; Finsch, *Ibis*, 1881, p. 540 [N. Britain]; Tristram, *Ibis*, 1882, p. 144 [Savo, Solomon Is.]; Hamilton, *Tr. N. Z. Inst.* xxi. p. 128 (1889) [Napier, N. Z.].
- Sula australis*, Steph. in *Shaw's Gen. Zool.* xiii. pt. i. p. 104 (1826) [Bahamas; Brazilian coast]; Hume, *Str. F.* v. p. 318 (1877); Hume & Davison, *Str. F.* vi. p. 493 (1878) [Penang; Singapore]; Butler, *Cat. B. S. Bombay*, p. 960 (1880).
- Sula fulica*, Less. *Traité d'Orn.* p. 601 (1831).
- Dysporus sula*, Newwied, *Beitr.* iv. p. 890 (1832); Bonap. *Consp. Av.* ii. p. 164 (1855); Heugl. *Ibis*, 1859, p. 351; A. & E. Newton, *Ibis*, 1859, p. 369 [St. Croix]; Martens, *J. f. O.* 1866, p. 29 [Philippines]; Finsch & Hartl. *Beitr. Faun. Centralpolynes.* p. 260, pl. iii. fig. 6 [egg] (1867); Hartl. *P. Z. S.* 1867, p. 831 [Pelew Is.]; Finsch & Hartl. *J. f. O.* 1870, p. 122 [Tongatabu]; Dohrn, *J. f. O.* 1871, p. 8 [Cape Verde Is.]; Finsch, *J. f. O.* 1872, pp. 33, 58 [Samoa]; Layard, *Ibis*, 1876, p. 393 [Fiji]; David & Oustal. *Ois. Chine*, p. 530 (1877); Meyer, *Ibis*, 1879, p. 145 [Celebes]; Finsch, *Ibis*, 1880, p. 434 [Gilbert Is.]; Oates, *B. Brit. Burmah*, ii. p. 229 (1883); Blasius, *J. f. O.* 1883, p. 140 [Celebes].
- Pelecanus plotus*, Forst. *Descr. Anim.* p. 278 (1844); *et Icon. ined.* 108.
- Sula fiber* (*nec* Linn. = *S. piscator* imm.), G. R. Gray, *List of B.* pt. iii. p. 183 (1844); Blyth, *Cat. Mus. As. Soc.* p. 296 (1849); Cassin, *U.S. Expl. Exped.* p. 363 (1858); Sclater & Salvin, *Ibis*, 1859, p. 233 [San Salvador]; Bryant, *P. Bost. Soc.* vii. p. 123 (1859) [Bahamas; breeding-habits]; Baird, *B. N. Amer.* p. 872 (1860); G. R. Gray, *P. Z. S.* 1861, p. 438 [Mysol]; *id.* *Ibis*, 1862, p. 250 [Enderby I., Lord Howe I.]; Schl. *Mus. Pays-Bas*, vi. *Pelec.* p. 41 (1863); Jerd. *B. Ind.* iii. p. 851 (1864); Taylor, *Ibis*, 1864, pp. 96, 173 [W. Indies]; Hartlaub, *Ibis*, 1864, p. 232 [Fiji Is.]; Salvin, *Ibis*, 1864, pp. 381, 385 [Brit. Honduras]; Gould, *Handb. B. Austr.* ii. p. 507 (1865); Dohrn, *P. Z. S.* 1866, p. 331 [Prince's I.]; Beavan, *Ibis*, 1868, p. 405 [Bay of Bengal]; G. R. Gray, *Hand-l. B.* iii. p. 126 (1871); Coues, *Key N. Am. B.* p. 298 (1872); Heugl. *Orn. N.O.-Afr.* iv. p. 1483 (1873); Salvad. *Ucc. Borneo*, p. 369 (1874); Hume, *Str. F.* ii. p. 324 (1874) [Cocos & Preparis Is.]; Hume, *Str. F.* iv. p. 483 (1876) [Laccadives]; Masters, *P. Linn. Soc. N. S. W.* i. p. 64 (1876); Blauf. *E. Pers.* ii. p. 299 (1876); Ramsay, *P. Linn. Soc. N. S. W.* i. p. 386 (1876), ii. p. 203 (1877); Sharpe & Bouvier, *Bull. Soc. Z. Fr.* iii. p. 80 (1878) [Landana]; Brewer, *Bull. Nutt. Orn. C.* iv. p. 191 (1879) [Massachusetts]; Cory, *B. Bahama Is.* p. 191 (1880); Bocage, *Orn. Angola*, p. 521 (1881); Maynard, *B. E. N. Amer.* p. 465 (1881); Sharpe, *P. Z. S.* 1881, p. 800 [Borneo]; Everett, *J. Str. B. As. Soc.* xx. p. 188 (1889) [Sandakan, N. Borneo]; Van Kempen, *Bull. Soc. Zool. Fr.* xiv. p. 105 (1889) [N. France]; Walker, *Ibis*, 1892, p. 257 [Adèle I. N.W. Australia]; Barnes, *Ibis*, 1893, p. 179 [Aden]; Yerbury, *Ibis*,



- 1896, p. 40 [Aden; Red Sea]; *Cholmley, Ibis*, 1897, p. 209 [Red Sea]; *Alexander, Ibis*, 1898, pp. 89, 93, 99, 100, 105, 108, 114, 117 [Cape Verde Is.].
- Dysporus brasiliensis*, *Rüpp. Vog. N.O.-Afr.* p. 140 (1845) [Red Sea]; *Heugl. Vog. N.O.-Afr.* p. 71 (1856).
- Sula leucogastra*, *Sclat. & Salv. P. Z. S.* 1878, p. 651 [Ascension: St. Paul's Rocks]; *Penrose, Ibis*, 1879, pp. 275, 281 [Ascension]; *Legge, B. Ceylon*, iii. p. 1177 (1880); *Sclat. & Salv. Voy. Chall., Zool.* pt. ix. p. 119 (1880); *Blakist. & Pryer, Tr. As. Soc. Jap.* x. p. 102 (1882) [Bonin Is.]; *Salvad. Orn. Pap.* iii. p. 421 (1882); *Cones, Key N. Amer. B.* p. 720 (1884); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 178 (1884); *Cory, B. Haiti & S. Domingo*, p. 171 (1885); *Blasius, Orn.*, 1888, p. 683 [Sanghir]; *Ramsay, Tab. List Austr. B.* p. 24 (1888); *Sharpe, J. Linn. Soc., Zool.* xx. p. 480 (1888) [Fernando Noronha]; *North, Nests & Eggs B. Austr.* p. 364 (1889); *Seebohm, B. Jap.* p. 212 (1890); *Wiglesw. Abb. Mus. Dresd.* 1890-91, p. 72; *Seebohm, Ibis*, 1890, p. 107 [Bonin Is.], 1891, p. 192 [Volcano Is.]; *Lister, P. Z. S.* 1891, pp. 294, 300 [Phoenix Is.].
- Dysporus parvus*, *Bonap. Consp. Av.* ii. p. 104 (1855).
- Sula sula*, *Ferr. & Des Murs, Rev. Mag. Zool.* 1860, p. 442 [New Caledonia]; *Ridgw. Man. N. A. B.* p. 75 (1887); *Cory, Auk*, v. p. 72 (1888) [Antilles]; *id. B. W. Ind.* p. 273 (1889); *Scott, Auk*, vii. p. 307 (1890); *Cory, Cat. W. Ind. B.* p. 84 (1892); *Rothsch. Avif. Laysan*, pt. i. p. 29 (1893); *A. O. U. Check-l.* p. 40 (1895).
- Sula sinicadvena*, *Scrinhoe, Ibis*, 1865, p. 109 [near Foochow].
- Dysporus fiber*, *Gundl. J. f. O.* 1875, p. 402 [Cuba: habits]; 1878, p. 191 [Porto Rico].

**Adult.** Head, neck, chest, entire upper parts, wings, and tail dark sooty-brown; breast, rest of the underparts, axillaries, and the under wing-coverts of the secondaries pure white. Tail composed of 14 feathers. Iris silvery white, white, or grey; bill whitish green or greenish blue, becoming flesh-coloured or bluish at the base; naked skin on sides of face and gular pouch bluish, greenish, or yellowish; legs and feet pale green or lead-green, sometimes inclining to yellowish.

**Adult male.** Total length about 28 inches, culmen from feathers on forehead 3.85-3.9, wing 14-14.9, tail 7.5-7.9, tarsus 1.6-1.7.

**Adult female.** Total length about 28 inches, culmen from feathers on forehead 4, wing 15.3-15.6, tail 7.5-7.7, tarsus 1.8-1.9.

**Immature in first plumage.** Differs in having the head, neck, chest, entire upper parts, wings, and tail brown, much lighter than in the adult; the breast, belly, and underparts still paler brown, the feathers fringed with whitish brown, and generally sharply defined from the darker chest; axillaries and secondary under wing-coverts mixed with smoky-brown.

In more mature birds (? plumage of the second year) the breast, belly, and underparts are largely mixed with white, only the subterminal portion of each feather being smoky-brown.

In a still more mature bird (? plumage of the third year) the head, neck, chest, and upper parts are darker brown, and more like those of the adult; and the breast and belly thickly mixed with the

pure white feathers of the adult. These appear to be entirely attained by moult, many half-grown ones being concealed beneath the plumage.

Birds from Fernando Noronha and Bahia appear to be perfectly similar to those from Australia [*cf.* Hume, *Str. F.* v. p. 321 (1877)].

*Hab.* Tropical and Sub-tropical seas throughout the world, except the Pacific coast of America, where its place appears to be taken by *S. brewsteri*.

|                                    |                                                                |                              |
|------------------------------------|----------------------------------------------------------------|------------------------------|
| <i>a.</i> Juv. sk.                 | Half-Moon Key, Brit. Honduras, May 9 ( <i>O. S.</i> ).         | Salvin-Godman Coll.          |
| <i>b.</i> Ad. sk.                  | Lion Hill Station, Panama ( <i>McClelland</i> ).               | Salvin-Godman Coll.          |
| <i>c, d.</i> ♀ ad. et imm. sk.     | Grenada, W. I., Sept. ( <i>D. W. Smith</i> ).                  | Salvin-Godman Coll.          |
| <i>e.</i> Ad. sk.                  | St. Vincent, W. I., Aug. 26 ( <i>D. W. S.</i> ).               | Salvin-Godman Coll.          |
| <i>f.</i> Ad. sk.                  | St. Nevis, W. I.                                               | T. Cottle, Esq. [P.].        |
| <i>g.</i> Juv. sk.                 | Bahia, Brazil ( <i>Wucherer</i> ).                             | Salvin-Godman Coll.          |
| <i>h.</i> Juv. sk.                 | Fernando Noronha, Sept. 2.                                     | Capt. Stanley, R.N. [P.].    |
| <i>i, k.</i> Ad. et juv. sk.       | Fernando Noronha.                                              | H. N. Ridley, Esq. [C.].     |
| <i>l, m.</i> Ad. sk.               | St. Paul's Rocks, Aug. 29.                                     | 'Challenger' Exped.          |
| <i>n.</i> Ad. sk.                  | Salt Creek, St. Paul's Rocks, Dec. 2 ( <i>R. McC.</i> ).       | MacCormick Bequest.          |
| <i>o.</i> ♀ juv. sk.               | Boatswain-bird I., Ascension, April 1.                         | 'Challenger' Exped.          |
| <i>p, q.</i> Ad. et pull. sk.      | Boatswain-bird I., Ascension, Dec. ( <i>Dr. D. Gill</i> ).     | Dr. Frank Penrose [P.].      |
| <i>r.</i> ♂ ad. sk.                | Prince's I., West Africa.                                      | Dr. Baikie [C.].             |
| <i>s, t.</i> ♀ vix ad. sk.         | I. of St. Thomas, Feb. 26 ( <i>F. Newton</i> ).                | Lisbon Museum [P.].          |
| <i>u.</i> Juv. sk.                 | At sea off the Cape of Good Hope.                              | E. M. Langworthy, Esq. [P.]. |
| <i>v, w.</i> Vix ad. sk.           | Little Aden.                                                   | Colonel J. W. Yerbury [P.].  |
| <i>x.</i> ♀ ad. sk.                | Pere Mull Par, Laccadives, Feb. 20 ( <i>A. O. H.</i> ).        | Hume Coll.                   |
| <i>y, z.</i> Ad. et imm. sk.       | Penang ( <i>Dr. Cantor</i> ).                                  | India Museum [P.].           |
| <i>a'.</i> ♀ juv. sk.              | Between Malacca and Penang, Aug. 12 ( <i>W. Davison</i> ).     | Hume Coll.                   |
| <i>b'.</i> Vix ad. sk.             | Malacca, July ( <i>Dr. Maingay</i> ).                          | Tweeddale Coll.              |
| <i>c', d'.</i> ♂ ad. et ♀ juv. sk. | Straits of Malacca, Aug.                                       | F. W. Styan, Esq. [P.].      |
| <i>e', f'.</i> ♀ ad. et pull. sk.  | Flying-fish Cove, Christmas I., Aug. ( <i>C. W. Andrews</i> ). | Dr. J. Murray [P.].          |
| <i>g'.</i> ♀ ad. sk.               | Tamsuy, Formosa ( <i>R. Swinhoe</i> ).                         | Seebohm Coll.                |
| <i>h'.</i> ♀ ad. sk.               | At sea, S. of Japan, April 6.                                  | 'Challenger' Exped.          |
| <i>i', k'.</i> ♂ ♀ ad. sk.         | Peel Island, May 11 ( <i>P. A. Holst</i> ).                    | Seebohm Coll.                |
| <i>l'.</i> Juv. sk.                | Mindanao, Philippine Is.                                       | Cuming Coll.                 |

|                                    |                                                           |                               |
|------------------------------------|-----------------------------------------------------------|-------------------------------|
| m'. ♂ ad. sk.                      | Dinagat, June (A. H. Everett).                            | Tweeddale Coll.               |
| n'. ♀ juv. sk.                     | Zamboanga, May (A. H. E.).                                | Tweeddale Coll.               |
| o'. Juv. sk.                       | Tiga I., N. Borneo.                                       | A. H. Everett, Esq. [C.].     |
| p'. Ad. sk.                        | Labuan I., Borneo.                                        | A. H. Everett, Esq. [C.].     |
| q'. ♂ ad. sk.                      | Celebes, Sept.                                            | C. Hose, Esq. [C.].           |
| r'. Ad. sk.                        | North-east Halmahera.                                     | Wallace Coll.                 |
| s'. Vix ad. sk.                    | Salawatti.                                                | Wallace Coll.                 |
| t'. Imm. sk.                       | Amboina.                                                  | Wallace Coll.                 |
| u'. ♂ imm. sk.                     | Ké Island.                                                | Wallace Coll.                 |
| v'. Imm. sk.                       | Huon Gulf, N.E. New Guinea (Dr. Comrie).                  | Tweeddale Coll.               |
| w'. Ad. sk.                        | Murray I., Torres Straits.                                | Rev. J. Macfarlane [P.].      |
| x'. ♂ ad. sk.                      | Raine I., N.E. Australia.                                 | 'Challenger' Exped. Old Coll. |
| y'. ♂ imm. sk.                     | Raine I., June 15.                                        | Salvin-Godman Coll.           |
| z'. Imm. sk.                       | Queensland (J. T. Cockerell).                             | Tweeddale Coll.               |
| a'', b''. ♂ imm. sk.               | Levuka, Fiji, Mar. 21 (E. L. Layard).                     |                               |
| c''. Ad. sk.                       | Howland I.                                                | Hume Coll.                    |
| d''. Ad. sk.                       | Asuncion I., Pacific, Long. 150° E., Lat. 18° N., May 30. | Lieut. Davies [P.].           |
| e''. Juv. sk.                      | [Straits of Magellan] (Capt. P. P. King).                 | The Admiralty [P.].           |
| f'. ♀ skeleton.                    | Costa Rica, Sept. 10.                                     | Capt. W. H. Milner [P.].      |
| g''. Sternum.                      | Jamaica.                                                  | P. H. Gosse, Esq. [C.].       |
| h'', i''. Heads in spirits.        | Raine I., N.E. Australia.                                 | 'Challenger' Exped.           |
| h', i'. Pull. in spirits.          | St. Paul's Rocks.                                         | 'Challenger' Exped.           |
| m'', n''. Ad. et pull. in spirits. |                                                           | 'Challenger' Exped.           |

### 9. *Sula brewsteri*.

*Dysporus leucogaster* Sundev. (nec Bodd.), *P. Z. S.* 1871, p. 125 (Galapagos Is.).

*Sula leucogastra*, Salvin, *Tr. Z. S.* ix. p. 496 (1876) [Galapagos Is.]; *Streets*, *Bull. U.S. Nat. Mus.* vii. p. 22 (1877) [Gulf of California].

*Sula fiber*, Cooper, *Bull. Nutt. Orn. C.* ii. p. 96 (1877) [Coast of California].

*Sula brewsteri*, Goss, *Auk*, v. p. 242 (1888) [San Pedro Martir I.]; *Stufeldt*, *Auk*, vi. p. 67 (1889); *A. O. U. Check-l.* p. 40 (1895); *Ridgw. Man. N. A. B.* 2nd ed. p. 585 (1896).

*Adult male*. Much like *S. sula*, but the head and throat are white, shading into smoky grey on the neck, the colour gradually deepening into brown on the chest and interscapular region.

Bill olive-blue; lores and bare space round eyes indigo-blue; gular sac dull slate-blue with a greenish tint; legs, feet, and webs light pea-green (*N. S. Goss*).

*Adult female*. Somewhat larger than the male, and similar in plumage to *S. sula*.

Bill pale bluish horn ; lores slate-blue, bare space round eyes and gular sac pale yellowish green ; legs, feet, and webs lighter in colour and with a yellower tinge (*N. S. Goss*).

Eight examples in the Rothschild Museum, from Jalisco, Mexico, and the Tres Marias Is., measure as follows :—

| Adult males. |              |              |                | Adult females. |              |              |                |
|--------------|--------------|--------------|----------------|----------------|--------------|--------------|----------------|
| Culm.<br>in. | Wing.<br>in. | Tail.<br>in. | Tarsus.<br>in. | Culm.<br>in.   | Wing.<br>in. | Tail.<br>in. | Tarsus.<br>in. |
| 3·5          | 14·2         | 7·2          | 1·7            | 3·7            | 15·7         | 7·3          | 1·8            |
| 3·7          | 14·4         | 7·2          | 1·65           | 3·9            | 15·5         | 7·2          | 1·8            |
| 3·5          | 14·5         | 7·5          | 1·65           | 3·8            | 15·9         | 7·3          | 1·75           |
| 3·6          | 14·8         | 7·3          | 1·75           | ·9             | 15·7         | 7·3          | 1·85           |

*Hab.* Pacific coast of America and adjacent islands, from the Gulf of California to the Galapagos Islands.

### Family III. FREGATIDÆ.

Palatines fused at the posterior end only. A large vomer. No nasal hinge.

Sternum *broad*er than long; carina extending the whole length of the corpus sterni. Furculum fused dorsally with the head of the coracoid, and ventrally with the carina sterni. (*W. P. Pyecraft.*)

#### 1. FREGATA.\*

|                                                                                                                                                                         | Type.             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| <i>Fregata</i> , [ <i>Brisson</i> , <i>Orn.</i> vi. p. 508 (1760)]; <i>Lactède</i> in <i>Buff. Hist. Nat.</i> (18mo, Didot), <i>Quadr.</i> xiv. p. 317 (1799) . . . . . | <i>F. aquila.</i> |
| <i>Tachypetes</i> , <i>Vieillot</i> , <i>Analyse</i> , pp. 63, 70 (1816); <i>id.</i> <i>N. Dict. d'Hist. Nat.</i> xii. p. 141 (1817) . . . . .                          | <i>F. aquila.</i> |
| <i>Fregatta</i> , <i>Stephens</i> in <i>Shaw's Gen. Zool.</i> xiii. pt. i. p. 119 (1826) . . . . .                                                                      | <i>F. aquila.</i> |
| <i>Attagen</i> , <i>Kaup</i> , <i>Naturl. Syst.</i> p. 170 (1829) . . . . .                                                                                             | <i>F. aquila.</i> |
| <i>Atagen</i> [ <i>Mochring</i> , <i>Ac. Gen.</i> p. 82, no. 108 (1752)]; <i>G. R. Gray</i> , <i>List Gen. B.</i> 2nd ed. p. 101 (1841) . . . .                         | <i>F. aquila.</i> |

Bill long and strongly hooked at the extremity, both mandibles being curved downward at the tip; culmen subcylindrical and concave; lateral grooves deep and dividing into two at the dertrum or nail, the lower branch terminating in a notch on the margin. Nostrils situated in the groove, basal and linear; a large naked gular pouch. Wings very long and pointed, the first quill being considerably the longest. Tail long and deeply forked, composed of 12 feathers. Tarsus very short and feathered; middle toe longest; web between toes deeply emarginate; claws long and curved, that on the middle toe pectinate on the inner side.

*Range.* Inter-tropical seas.

#### *Key to the Species.*

- I. Breast and sides black. (*Males.*)
  - a. Size larger: culmen 3.6-4.4; wing 20.5-25.8; no white patches on the flanks . . . . . *aquila*, p. 443.
  - b. Size smaller: culmen 2.3-3.5; wing 19.2-21.0; a white patch on each flank . . . . . *ariel*, p. 447.
- II. Breast and sides white. (*Females.*)
  - c. Size larger: culmen 4.3-5.2; wing 22.9-26.7; no white collar round the back of the neck . . . . . *aquila*, p. 443.
  - d. Size smaller: culmen 3.2-3.6; wing 20.1-20.8; a white collar round the back of the neck . . . . . *ariel*, p. 447.

\* The following works refer to the osteology, etc., of the genus.—*Brandt*, *Mém. Acad. St. Petersb.* (6) v. pt. ii. Livr. ii. pp. 84, 117, 148, 186, pl. ix. (1839), *Nitzsch*, *Pteryl.*, Engl. ed. p. 149 (1867).

1. *Fregata aquila*.

- Man of War Bird, *Edwards, Glean. N. H.* pt. ii. p. 209, pl. 309 (1760) [adult female].
- La Frégate, *Brisson, Orn.* vi. p. 506, pl. xliii. fig. 2 (1760) [Coasts of America]; *Buff. Hist. Nat. Ois.* viii. p. 381, pl. xxx. (1781).
- La Petite Frégate, *Brisson, Orn.* vi. p. 509 (1760).
- Pelecanus aquilus*, *Linn. S. N.* i. p. 216 (1766); *Gmel. S. N.* i. pt. ii. p. 572 (1788); *Lath. Ind. Orn.* ii. p. 885 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 45, pl. xiv. fig. 2 (1790); *Cur. Règ. Anim., Ois.* p. 525 (1817).
- La Grande Frégate de Cayenne, *D'Aubent. Pl. Enl.* ix. pl. 79 [no. 961].
- Frigate Pelican, *Lath. Gen. Syn.* iii. pt. ii. p. 587 (1785).
- Lesser Frigate Pelican, *Lath. Gen. Syn.* iii. pt. ii. p. 590 (1785); *id. Gen. Hist. B.* x. p. 412 (1824).
- White-headed Frigate Pelican, *Lath. Gen. Syn.* iii. pt. ii. p. 591 (1785); *id. Gen. Hist. B.* x. p. 413 (1824).
- Palmerston Frigate Pelican, *Lath. Gen. Syn.* iii. pt. ii. p. 592 (1785); *id. Gen. Hist. B.* x. p. 414 (1824).
- Pelecanus minor*, *Gmel. S. N.* i. pt. ii. p. 572 (1788); *Lath. Ind. Orn.* ii. p. 885 (1790).
- Pelecanus leucocephalus*, *Gmel. S. N.* i. pt. ii. p. 572 (1788); *Lath. Ind. Orn.* ii. p. 885 (1790).
- Pelecanus palmerstoni*, *Gmel. S. N.* i. pt. ii. p. 573 (1788); *Lath. Ind. Orn.* ii. p. 886 (1790).
- Carbo aquilus*, *Meyer u. Wolf, Taschen. der Deutschl.* ii. p. 580 (1810).
- Tachypetes aquila*, *Vieill. N. Dict. d'Hist. Nat.* xii. p. 143 (1817); *id. Gal. Ois.* ii. p. 187, pl. 274 (1825); *Spir. Av. Bras.* ii. p. 82, pl. cv. (1825); *Ménéville, Icon. Règ. Anim., Ois.* pl. 64. fig. 2 (1829-38); *Lesson, Traité d'Orn.* p. 606, pl. 115. fig. 1 (1831); *Vigors, P. Z. S.* 1831, p. 62 [gular air-sac]; *Neuceid, Beitr.* iv. p. 885 (1832); *Schinz, Nat. Abbild., Vög.* p. 387, pl. 133. fig. (1833); *Nutt. Man. Orn.* p. 491 (1834); *Aud. Orn. Biogr.* iii. p. 495, pl. 271 (1835); *id. B. Amer.* vii. p. 169, pl. 421 (1839); *Tschudi, Faun. Peru., Orn.* p. 314 (1845); *Sunder. Ann. Mag. N. H.* xix. p. 233 (1847); *Cub. in Schomb. Faun. Brit. Guiana*, p. 763 (1848); *Gambel, J. Ac. Philad.* (2) i. p. 227 (1849); *Bonap. Consp. Av.* ii. p. 166 (1855); *Newberry, Rep. Expl. Surv.* vi. pt. iv. p. 106 (1857); *Gundl. J. f. O.* 1857, p. 239 [Cuba]; *Cassin, U.S. Expl. Exped.* p. 358 (1858); *Sclat. & Salvin, Ibis*, 1859, p. 233 [both coasts Centr. America]; *A. & E. Newton, Ibis*, 1859, p. 369 [St. Croix]; *Bryant, P. Bost. Soc.* vii. p. 126 (1859) [Bahamas: breeding-habits]; *Jones, Nat. Bermuda*, p. 51 (1859); *Baird, B. N. Amer.* p. 873 (1860); *Gould, Handb. B. Austr.* ii. p. 499 (1865); *Dresser, Ibis*, 1866, p. 45 [S. Texas]; *Baird, Ibis*, 1867, p. 285 [Weser]; *Finsch & Hartl. Beitr. Faun. Centralpolynes.* p. 265 (1867) [part]; *Melliss, Ibis*, 1870, p. 105 [St. Helena]; *Layard, Ibis*, 1870, p. 393 [Fiji]; *id. Ibis*, 1870, p. 233 [Loyalty Is.]; *Coues, Key N. Am. B.* p. 306 (1872); *Finsch, J. f. O.* 1872, pp. 33, 58 [Samoa], 1874, pp. 174, 216 [N. Island, New Zealand; Australia]; *Gundl. J. f. O.* 1875, p. 406 [Cuba: habits]; *Cab. & Reichen. J. f. O.* 1876, p. 329 [Kerguelen]; *Masters, P. Linn. Soc. N.S.W.* i. p. 64 (1876) [Torres Straits]; *Laur. Bull. U.S. Nat. Mus.* iv. p. 51 (1876)

- Layard, Ibis*, 1877, p. 363 [New Caledonia]; *Sharpe, Phil. Trans.* clxviii (extra vol.) p. 151 (1879); *Penrose, Ibis*, 1879, p. 276 [Ascension]; *Deane, Bull. Nutt. Orn. C.* iv. p. 64 (1879) [Nova Scotia]; *Finsch, Ibis*, 1880, p. 333 [Marshall Group]; *Cory, B. Bahama Is.* p. 200 (1880); *Finsch, J. f. O.* 1880, pp. 296, 310 [Carolines]; *id. Ibis*, 1881, p. 109 [Kushai], p. 115 [Ponapé], p. 540 [New Britain]; *Maynard, B. E. N. Amer.* p. 472 (1881); *Buller, Man. B. N. Zeal.* p. 98 (1882); *Stearns & Coues, N. Engl. B.-Life*, pt. ii p. 341 (1883); *Coues, Key N. Am. B.* p. 731 (1884); *Reid, Bull. U.S. Nat. Mus.* xiv. p. 263 (1884) [Bermuda]; *Cory, B. Haiti & S. Domingo*, p. 173 (1885); *Merriam, Auk*, ii. p. 113 (1885) [Godbout, Canada]; *Gosse, Auk*, iii. p. 113 (1886) [Kansas]; *Buller, B. N. Zeal.* 2nd ed. ii. p. 182 (1888); *Simroth, Archiv f. Naturg.* i. p. 194 (1888) [Azores]; *Berlepsch, J. f. O.* 1892, p. 104 [Curaçoa]; *Peters, J. f. O.* 1892, p. 121; *Christy, Ibis*, 1897, p. 342 [San Domingo].
- Tachypetes minor*, *Vieill. N. Dict. d'Hist. Nat.* xii. p. 144 (1817); *Buller, Man. B. N. Zeal.* p. 99 (1882); *id. B. N. Zeal.* 2nd ed. ii. p. 185 (1888).
- Greater Frigate Pelican, *Lath. Gen. Hist. B.* x. p. 410 (1824).
- Fregata leucocephala*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 122 (1826); *Reichenb. Natatores*, pl. xxxi. no. 373 (1850).
- Fregata palmerstonis*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 123 (1826).
- Common Frigate-Bird, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. pl. 18 (1826).
- Fregatta aquilus*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 120 (1826); *Müller, J. f. O.* 1882, p. 436 [Salanga].
- Fregata aquila*, *D'Orb. in Sagra's Hist. Cuba*, p. 309 (1839); *Gould, Zool. Voy. 'Beagle'*, pt. iii. *Birds*, p. 146 (1841) [Galapagos]; *Gosse, B. Jamaica*, p. 422 (1847); *Reichenb. Natatores*, pl. xxxi. no. 372 (1850); *Hartl. J. f. O.* 1854, p. 170 [Galapagos]; *Taylor, Ibis*, 1859, p. 150, 1860, p. 316 [Fonseca Bay, Honduras: nesting]; *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 2 (1863); *Taylor, Ibis*, 1864, pp. 96, 172; *Sperling, Ibis*, 1868, p. 295 [Comoro Is.]; *Buller, B. N. Zeal.* p. 339 (1873); *Salvad. Ucc. Borneo*, p. 304 (1874); *Salvin, Tr. Z. S.* ix. p. 496 (1876) [Galapagos]; *Butler, Cat. B. S. Bombay*, p. 112 (1880); *Selat. & Salv. Voy. Chall., Zool.* pt. ix. p. 117 (1880); *Legge, B. Ceylon*, iii. p. 1204 (1880); *Salvad. Orn. Pap.* iii. p. 400 (1882); *Milne-Edw. Ann. Sci. Nat.* (6) xiii. Art. 4, p. 37 (1882) [Crozet Is.]; *Salvin, P. Z. S.* 1883, p. 427 [Peru]; *Oates, B. Burmah*, ii. p. 227 (1883); *Saunders, P. Z. S.* 1886, p. 335 [Diego Garcia, Indian Ocean]; *Tacz. Orn. Pérou*, iii. p. 427 (1886); *Sharpe, P. Z. S.* 1887, p. 516 [Christmas I., Indian Ocean]; *Ridgw. Man. N. A. B.* p. 83 (1887); *Cory, Auk*, v. p. 69 (1888); *Dutcher, Auk*, v. p. 173 (1888) [Long I.]; *Scott, Auk*, v. p. 378 (1888) [Florida]; *Salvin, Ibis*, 1889, p. 376 [Yucatan]; *Feilden, Ibis*, 1889, p. 501 [Barbados]; *Palmer, Pr. Cal. Acad.* (2) ii. p. 88 (1889) [Humboldt Bay, California]; *Everett, J. Str. Br. As. Soc.* xx. p. 187 (1889) [Borneo]; *Scott, Auk*, vii. p. 307 (1890); *Bryant, Pr. Cal. Acad.* (2) ii. p. 260 (1890) [Lower California]; *Wiglesw. Abh. Mus. Dresd.* 1890-91, p. 71; *Hartert, Kat. Mus. Senckenb.* p. 235 (1891); *Scott, Auk*, viii. p. 363 (1891) [Jamaica], ix. p. 211 (1892); *Cory, Cal. W. Ind. B.* p. 85 (1892); *Lawr. Auk*, x. p. 362 (1893) [California]; *Hartert, Ibis*, 1893, p. 308



- [Aruba and Madagascar; *Rothschild, Arif. Laysan*, pt. i. p. 21 (1893); *Field. Auk*, xi. p. 120 (1894); *A. O. U. Check-l.* p. 46 (1895); *Butler. Auk*, xiv. p. 200 (1897) [Indiana]; *Alexander, Ibis*, 1898, pp. 90, 114, 117 [Cape Verde Is.].
- Tachypetes palmerstoni*, *Cassin, U. S. Expl. Exped.* p. 359 (1858).
- Atagen aquilus*, *Jerd. B. Ind.* iii. p. 853 (1864); *Beavan, Ibis*, 1868, p. 405; *G. R. Gray, Hand-l. B.* iii. p. 131 (1871).
- Fregata caroliniana*, *Lesson, fide G. R. Gray, Hand-l. B.* iii. p. 131 (1871).
- Atagen aquilus*, *Ramsay, Pr. Linn. Soc. N. S. W.* ii. p. 203 (1877); *id. Tab. List Austr. B.* p. 25 (1888).
- Fregata minor*, *Buller, B. N. Zeal.* p. 342 (1873); *Hume, Str. F.* ix. p. 119 (1880); *Ridgw. Man. N. A. B.* p. 83 (1887); *Sibree, Ibis*, 1892, p. 271 [Madagascar].
- Fregata strumosa*, *Kittl. fide Hartert, Kat. Mus. Senckenb.* p. 235 (1891).

*Adult male.* General colour of plumage black, inclining to sooty-black on the underparts; feathers of the head, upper back, and scapulars elongate and pointed, the former with a dull oil-green gloss, the latter glossed with bronze-green in freshly-moulted birds, but becoming purplish with wear; no trace of white patches on the flanks. Tail composed of 12 feathers. Iris dark brown; bill light purplish blue, white in the middle, the curved tips dusky; inside of mouth carmine; gular pouch scarlet or orange, bare space about the eye purplish blue; feet light carmine above, orange beneath (*J. J. Audubon*). Total length about 40 inches, culmen from feathers on forehead 3.6–4.4, wing 20.5–25.8, tail 14.0–14.8, tarsus 0.7.

*Adult female.* Feathers of the head less elongate than in the male and with little or no gloss; upper back and scapulars slightly elongate and almost devoid of metallic gloss; *back of the neck dark brown*; fore-neck, chest, breast, and sides of belly pure white; lesser and median wing-coverts brown, with paler margins and dark middles; rest of plumage like that of the adult male. Iris dark brown; bill bluish horn-colour; orbits and gular skin dark plumbeous, with a tinge of violet; feet carmine. Total length about 40 inches, culmen from feathers on forehead 4.3–5.2, wing 22.9–26.7, tail 14.7–19.0, tarsus 1.0.

*Male and female immature.* Head, neck, and upper part of chest, as well as the middle of the lower breast and belly, white; sides and upper breast dark sooty-brown; rest of the plumage like that of the adult female. Iris dull dark blue; naked skin on throat lavender; bill horn-colour, darker at base; feet pale pinkish blue.

*Hab.* Tropical and Sub-tropical seas.

|                              |                                       | Culmen. | Wing.                   | Tail.           |
|------------------------------|---------------------------------------|---------|-------------------------|-----------------|
|                              |                                       | in.     | in.                     | in.             |
| ♂ ad.                        | Ascension I. . . . .                  | 3·6     | 22·3                    | 15·2            |
| ♂ ad.                        | Ascension I. . . . .                  | 4·0     | 22·8                    | 16·0            |
| ♂ ad.                        | Ascension I. . . . .                  | 3·6     | 22·4                    | 15·3            |
| ♂ ad.                        | Seychelles . . . . .                  | 3·9     | 23·2                    | 17·6            |
| ♂ ad.                        | Malacca . . . . .                     | 3·6     | 20·5                    | 14·0            |
| imm.                         | Torres Straits . . . . .              | 3·9     | 22·5                    | 14·4            |
| ? ♂ imm.                     | Queensland . . . . .                  | 3·5     | 20·9                    | 11·0            |
| ♂ ad.                        | Queensland . . . . .                  | 3·9     | 21·5                    | 16·5            |
| ♂ ad.                        | Queensland . . . . .                  | 4·0     | 21·7                    | 14·8            |
| ♂ ad.                        | Laysan . . . . .                      | 4·0     |                         |                 |
| ♂ ad.                        | California . . . . .                  | 4·1     | 24·5                    | 18·5            |
| ♂ ad.                        | W. Mexico . . . . .                   | 4·5     |                         |                 |
| ♂ ad.                        | Florida . . . . .                     | 3·9     | 24·0                    | 16·7            |
| ♂ ad.                        | Florida . . . . .                     | 4·0     |                         |                 |
| ♂ ad.                        | Cayman, W I. . . . .                  | 4·0     | 23·6                    | 15·6            |
| ♂ ad.                        | Brit. Honduras . . . . .              | 4·4     | 24·3                    | 17·6            |
| ♂ ad.                        | Galapagos . . . . .                   | 4·4     | 25·7                    | 18·8            |
| ♂ ad.                        | Galapagos . . . . .                   | 4·2     | 25·4                    | 19·5            |
| imm.                         | Peru . . . . .                        | 4·1     | 25·8                    | 17·0            |
| ♂ ad.                        | Aruba . . . . .                       | 4·4     |                         |                 |
| ♂ ad.                        | Brazil . . . . .                      | 3·9     | in moult.               | 18·8            |
| imm.                         | Ascension I. . . . .                  | 3·8     | 23·2                    | 14·5 worn.      |
| ♂ ad.                        | Gambia . . . . .                      | 5·2     | 24·0 worn               | broken.         |
| ♂ ad.                        | Madagascar . . . . .                  | 4·4     |                         |                 |
| imm.                         | Seychelles . . . . .                  | 4·3     | 23·3                    | 15·5            |
| ♂ ad.                        | Ceylon . . . . .                      | 4·7     | in moult                | in moult.       |
| ♂ ad.                        | Race I . . . . .                      | 4·5     | 22·9                    | 14·7            |
| ♂ ad.                        | New Zealand . . . . .                 | 4·5     |                         |                 |
| ♂ ad.                        | New Zealand . . . . .                 | 4·6     |                         |                 |
| imm.                         | Samoa . . . . .                       | 4·4     | 22·7                    | 13·6            |
| imm.                         | Samoa . . . . .                       | 4·3     | 20·8                    | broken.         |
| 2 ♂ ad.                      | Laysan . . . . .                      | 4·0     |                         |                 |
| ♂ ad.                        | N. America . . . . .                  | 4·3     | 25·0                    | 17·0            |
| imm.                         | California . . . . .                  | 4·5     | 25·5                    | 16·5            |
| imm.                         | Mexico . . . . .                      | 4·9     | 26·5                    | 17·5            |
| ♂ ad.                        | Mexico . . . . .                      | 4·4     |                         |                 |
| ♂ ad.                        | Florida . . . . .                     | 4·5     | 24·0                    | 17·8            |
| ♂ ad.                        | Florida . . . . .                     | 4·7     | 25·5                    | 18·8            |
| ♂ ad.                        | Florida . . . . .                     | 4·6     | 26·0                    | 19·5            |
| ♂ ad.                        | Guatemala . . . . .                   | 4·7     | 25·5                    | 14·3 in moult.  |
| ♂ ad.                        | Brit. Honduras . . . . .              | 4·5     | 24·2                    | 17·0            |
| imm.                         | Brit. Honduras . . . . .              | 4·8     | 26·7                    | 17·0 much worn. |
| imm.                         | Cozumel . . . . .                     | 4·6     | 25·3                    | 16·0            |
| ♂                            | Panama . . . . .                      | 4·6     | 25·0                    | 17·8            |
| imm.                         | Peru . . . . .                        | 4·3     | 24·3                    | 16·2            |
| ♂ ad.                        | St. Vincent, W I . . . . .            | 4·7     | 25·0                    | 15·0 in moult   |
| ♂ ad.                        | Aruba . . . . .                       | 4·7     |                         |                 |
| imm.                         | Trinidad . . . . .                    | 4·2     | 23·5                    | 14·0            |
| ♂ ad.                        | Brazil . . . . .                      | 4·7     | 24·2 in moult           | 19·0            |
| a, b. ♂ ad. sk.              | Ascension Island.                     |         | J. Noble, Esq. [P.].    |                 |
| c-e. ♂ ♀ ad. et imm. sk.     | Ascension Island.                     |         | 'Challenger' Exped.     |                 |
| f-h. ♂ ad, juv. et pull. sk. | Ascension Island, Dec. (Dr. D. Gill). |         | Dr. Frank Penrose [P.]. |                 |
| i. ♀ ad. sk.                 | R. Gambia, W. Africa.                 |         | Rev. D. F. Morgan [P.]. |                 |
| k, l. ♂ ad. et ♀ imm. sk.    | Seychelles.                           |         | Shelley Coll.           |                 |
| m. ♂ imm. sk.                | Diego Garcia, Indian Ocean, Sept. 29. |         | G. C. Bourne, Esq [P.]. |                 |
| n. ♀ ad. sk.                 | Ceylon (H. Nevill).                   |         | Tweeddale Coll.         |                 |

|                                                     |                                                                           |                                            |
|-----------------------------------------------------|---------------------------------------------------------------------------|--------------------------------------------|
| <i>o.</i> ♂ ad. sk.                                 | Malacca ( <i>W. Davison</i> ).                                            | Hume Coll.                                 |
| <i>p.</i> ♀ imm. sk.                                | Celebes, Nov.                                                             | C. Hose, Esq. [C.].                        |
| <i>q.</i> ♂ imm. sk.                                | Oomaga I., Torres Straits,<br>March 22 ( <i>J. Macgillivray</i> ).        | Voyage of H.M.S.<br>'Rattlesnake.'         |
| <i>r-t.</i> ♂ ad. et imm.<br>sk.                    | Queensland Coast ( <i>J. T.</i><br><i>Cockerell</i> ).                    | Salvin-Godman Coll.                        |
| <i>u.</i> ♀ ad. sk.                                 | Raine Island, N.E. Australia.                                             | Gould Coll.                                |
| <i>v.</i> Imm. sk.                                  | Samoa.                                                                    | Gould Coll.                                |
| <i>w.</i> Imm. sk.                                  | Samoa.                                                                    | Rev. S. J. Whitmee<br>[C.].                |
| <i>x.</i> ♀ ad. sk.                                 | North America.                                                            | H.R.H. Duke of<br>Sussex [P.].             |
| <i>y.</i> ♂ ad. sk.                                 | Santa Clara, San Francisco,<br>California.                                | Capt. Kellett & Lieut.<br>Wood, R.N. [P.]. |
| <i>z.</i> ♀ imm. sk.                                | La Paz, Lower California, Dec.<br>( <i>A. Forrer</i> ).                   | Salvin-Godman Coll.                        |
| <i>a'.</i> Imm. sk.                                 | Tamaulipas, Mexico ( <i>W. B.</i><br><i>Richardson</i> ).                 | Salvin-Godman Coll.                        |
| <i>b'-e'.</i> ♂ ♀ ad. sk.                           | Tarpon Springs, Florida, May,<br>July ( <i>W. E. D. Scott</i> ).          | Salvin-Godman Coll.                        |
| <i>f'.</i> ♂ ad. sk.                                | Little Cayman, W.I., April 20<br>( <i>C. J. Maynard</i> ).                | Salvin-Godman Coll.                        |
| <i>g'.</i> ♀ ad. sk.                                | St. Vincent, W.I., May 15 ( <i>D.</i><br><i>W. Smith</i> ).               | Salvin-Godman Coll.                        |
| <i>h'.</i> ♀ ad. sk.                                | Champerico, Guatemala.                                                    | Salvin-Godman Coll.                        |
| <i>i'.</i> ♂ ad. sk.                                | Belize Coast, Brit. Honduras,<br>May ( <i>O. S.</i> ).                    | Salvin-Godman Coll.                        |
| <i>k'-m'.</i> ♀ ad., imm.<br>et pull. sk.           | Man o' War Key, Turneff La-<br>goon, B. Honduras, May 8 ( <i>O. S.</i> ). | Salvin-Godman Coll.                        |
| <i>n'.</i> ♀ imm. sk.                               | Cozumel I., Yucatan ( <i>G. F.</i><br><i>Graumer</i> ).                   | Salvin-Godman Coll.                        |
| <i>o'.</i> ♀ ad. sk.                                | Panama.                                                                   | Capt. Kellett & Lieut.<br>Wood, R.N. [P.]. |
| <i>p', q'.</i> ♂ ♀ imm.<br>sk.                      | Payta, Peru, Jan. ( <i>Admiral</i><br><i>A. H. Markham</i> ).             | Salvin-Godman Coll.                        |
| <i>r'.</i> ♂ ad. sk.                                | Brazil.                                                                   | Old Coll.                                  |
| <i>s'.</i> ♀ ad. sk.                                | Bahia, Brazil ( <i>Wucherer</i> ).                                        | Salvin-Godman Coll.                        |
| <i>t'.</i> Ad. st.                                  | Rio, Brazil.                                                              | Capt. Milner [P.].                         |
| <i>u'.</i> ♀ imm. sk.                               | I. of Trinidad, Lat. 20° 23" S.,<br>Long. 29° 43" W., Aug. 20.            | Earl of Crawford<br>[P.].                  |
| <i>v'.</i> Skel., mounted.                          | Ascension Island.                                                         | 'Challenger' Exped.                        |
| <i>w'.</i> Skeleton.                                | Ascension Island.                                                         | 'Challenger' Exped.                        |
| <i>x'.</i> Skull.                                   |                                                                           |                                            |
| <i>y'.</i> Sternum.                                 | Jamaica.                                                                  | Gosse Coll.                                |
| <i>z'-d''.</i> Ad., juv. et<br>pull. in spirits.    | Ascension Island.                                                         | 'Challenger' Exped.                        |
| <i>e''-g''.</i> Eggs contg.<br>embryos, in spirits. | Ascension Island.                                                         | 'Challenger' Exped.                        |
| <i>h''.</i> ♂ ad. in spirits.                       | Christmas I., Indian Ocean.                                               | J. J. Lister, Esq. [P.].                   |

2. *Fregata ariel*.

*Attagen ariel*, Gould, in *Gray's Gen. B.* iii. p. 669 (1845); *id. B. Austr.* vii. pl. 72 (1848); *Layard, Ann. Mag. N. H.* (2) xiv. p. 271 (1854) [Ceylon]; *Krefft, Ibis*, 1862, p. 191 [Brampton Shoals]; *Rosenb. J. f. O.* 1864, p. 138 [S. New Guinea; Torres Straits].  
*Tachypetes minor*, Verr. & Des Murs (*nec Gmel.*), *Rev. Mag. Zool.* 1860, p. 442 [New Caledonia]; *Hartl. Orn. Madagasc.* p. 87 (1861); *Jouan, Mém. Soc. Cherbourg*, ix. p. 241 (1863) [New

Caledonia], *Gould, Handb. B. Austr.* ii. p. 499 (1865); *Hartl. P. Z. S.* 1867, p. 831 [Mackenzie Group]; *Swinhoe, Ibis*, 1868, pp. 54-58 [Amoy]; *Finch, J. f. O.* 1874, pp. 174, 216 [South I., New Zealand; Australia]; *Masters, P. Linn. Soc. N. S. W.* i. p. 64 (1876); *Streets, Bull. U. S. Nat. Mus.* vii. p. 25 (1877) [Christmas & Palmyra Is.]; *Hartl. Voy. Madagasc.* p. 399 (1877); *Layard, Ibis*, 1878, p. 265 [Huon I., N. Caledonia; breeds]; *Nicholson, Ibis*, 1882, p. 71 [Cocos, Keeling Is.]; *North, Nests & Eggs B. Austr.* p. 364 (1880).

*Fregata minor*, *Schl. (nec Gmel.), Mus. Pays-Bas*, vi. *Pelec.* p. 3 (1863); *Schleg & Pollen, Rech. Madagasc.* pt. ii. p. 141 (1868); *G. R. Gray, Hand-l. B.* iii. p. 131 (1871); *Salvad. Ucc. Borneo*, p. 304 (1874); *Hume, Str. F.* vii. p. 447 (1878); *Sclat. & Salv. Voy. Chall.* Zool. pt. ix. p. 117 (1880); *Leyce, B. Ceylon*, iii. p. 1203 (1880); *Salvad. Orn. Pap.* iii. p. 404 (1882); *Oates, B. Burmah*, ii. p. 228 (1883); *Buttkofer, N. Leyd. Mus.* viii. pp. 53, 68 (1886) [Tenimber Is.]; *Sharpe, Ibis*, 1888, p. 204 [Palawan]; *Everett, J. Str. B. As. Soc.* xx. p. 187 (1889); *Seeborn, B. Jap.* p. 214 (1890); *Whitchend, Ibis*, 1890, p. 61; *Sharpe, Ibis*, 1890, p. 140 [Labuan]; *Lister, P. Z. S.* 1891, pp. 290, 300, pl. Phoenix Is.; *Hartert, Ibis*, 1893, p. 308 [Madagascar]; *Grunt, Ibis*, 1896, p. 128 [N.E. Luzon].

*Fregata ariel*, *Reichenb. Natatores*, pl. xxxi. no. 375, pl. xxxv. nos. 2545-6 (1860).

*Tachypetes palmerstoni*, *Sclater (nec Gmel.), P. Z. S.* 1864, pp. 9, 10 [Huahine].

*Tachypetes chambeyroni*, *Montrouzier, Bull. Soc. Géogr. Fr.* (6) xii. p. 616 (1876) [Huon and Surprise Is.].

*Attagen minor*, *Ramsay (nec Gmel.), P. Linn. Soc. N. S. W.* ii. p. 203 (1877); *David & Oustal. Ois. Chine*, p. 534 (1877); *Kelham, Ibis*, 1882, p. 202 [Pulo Nongso, Singapore]; *Seeborn, Ibis*, 1884, p. 33 [Japan]; *Ramsay, Tab. List Austr. B.* p. 25 (1888); *La Touche, Ibis*, 1892, p. 167 [Swatow coast].

*Tachypetes aquila*, var. *minor*, *Grandidier, Hist. Madagasc.* Ois. p. 705, pls. 286-288 (1885).

**Adult male.** General colour black, inclining to sooty-black on the underparts; feathers of the head, upper back, and scapulars elongate and pointed, the former with a dull oil-green gloss, the latter dark metallic green in freshly moulted specimens, but becoming bronze or purple with wear; a large white patch on each flank. Tail composed of 12 feathers. Iris black; naked skin round the eye and gular pouch red; bill grey; feet black. Total length about 30 inches, culmen from feathers on forehead 2.3-3.5, wing 19.2-21, tail 11-13.3, tarsus 0.75.

**Adult female.** Has the head like that of the male, but differs in having the feathers of the back and scapulars less elongate and of a brownish-black colour with scarcely a trace of metallic gloss; breast, sides of belly, flanks, and a wide collar round the neck white; lesser and median wing-coverts pale brown, with whitish margins and deep brown shaft-stripes; plumage otherwise like that of the male. Iris red; bill grey; bare skin round the eye and on the throat red, but not so light as that of the male; feet red. Total length about 30 inches, culmen from feathers on forehead 3.2-3.6, wing 20.1-20.8, tail 11.3-13.5, tarsus 0.7.

**Male and female immature.** Head and neck white, shading into brown on the chest, breast, sides of the belly, lower neck, and upper parts; middle of the belly and flanks white. It will thus

be seen that the colours of the above parts are just the reverse of those of the adult female, the white parts being dark and *vice versa*; rest of the plumage much like that of the adult female. Iris black; bill and feet whitish with a shade of blue.

|         |                       | Culmen.<br>in. | Wing.<br>in.          | Tail.<br>in.   |
|---------|-----------------------|----------------|-----------------------|----------------|
| ♂ ad.   | Madagascar .....      | 3·1            |                       |                |
| ♂ imm.  | Luzon .....           | 3·1            | 20·5                  | 12·2           |
| ♂ ad.   | Palawan .....         | 3·3            |                       |                |
| ♂ ad.   | Ceram .....           | 3·5            | 19·2                  | 12·0           |
| ♂ ad.   | Admiralty Is. ....    | 3·5            | 20·9                  | 12·7           |
| ♂ ad.   | N.W. Australia .....  | 3·5            | 21·0                  | 13·0           |
| ♂ ad.   | Cape York .....       | 3·3            | 19·8                  | 12·9           |
| ♂ ad.   | Raine I. ....         | 2·3            | 20·6                  | 11·0           |
| ♂ ad.   | Brampton Shoals ..... | 3·5            | 20·2                  | 13·3           |
| ♂ ad.   | Fiji .....            | 3·2            | 20·6                  | 11·2 in moult. |
| ♂ ad.   | Windward Is. ....     | 3·5            | imperfect             | 11·8           |
| ♂ ad.   | Mauritius .....       | 3·2            | 20·1                  | 12·0           |
| ♂ ad.   | Farquhar I. ....      | 3·2            | 20·6                  | 13·0           |
| ♂ imm.  | Labuan .....          | 3·3            | 20·2                  | 11·2           |
| ♂ imm.  | Labuan .....          | 3·3            | 20·0                  | 10·5 (worn).   |
| 2 ♀ ad. | Labuan .....          | 3·5            |                       |                |
| ♀ imm.  | Amoy .....            | 3·3            | 20·3                  | 12·0           |
| ♀ imm.  | Hakodadi .....        | 3·2            | 20·2                  | 12·3           |
| ♀ ad.   | New Guinea .....      | 3·4            | 20·1                  | 11·3           |
| ♀ ad.   | Torres Straits .....  | 3·5            |                       |                |
| ♀ ad.   | Woody Wallis I. ....  | 3·5            | 20·4                  | 12·2           |
| ♀ ad.   | Raine I. ....         | 3·6            | 20·8                  | 13·5           |
| ♀ ad.   | Raine I. ....         | 3·4            | 20·7                  | 12·6           |
| ♀ juv.  | Raine I. ....         | 3·5            | $\frac{3}{4}$ -grown. |                |

*Hab.* Tropical parts of the Indian and Pacific Oceans, ranging west to Madagascar and east to the Society Islands.

|                                    |                                                       |                                  |
|------------------------------------|-------------------------------------------------------|----------------------------------|
| a. ♀ ad. sk.                       | Mauritius ( <i>Capt. Bewsher</i> ).                   | Shelley Coll                     |
| b. ♀ ad. sk.                       | Farquhar I., Aug. ( <i>G. Stevens</i> ).              | Howard Saunders,<br>Esq. [P.].   |
| c, d. Imm. sk.                     | Labuan, Borneo.                                       | Governor Ussher [P.].            |
| e. ♀ imm. sk.                      | Amoy, China, July 17 ( <i>R. S.</i> ).                | Seebohm Coll.                    |
| f. Imm. sk.                        | Hakodadi, Japan, Oct.                                 | Capt. T. Blakiston [P.].         |
| g. ♂ imm. sk.                      | Cape Engaño, N.E. Luzon,<br>May 31.                   | J. Whitehead, Esq.<br>[C.].      |
| h. ♂ ad. sk.                       | Ceram.                                                | A. R. Wallace, Esq.<br>[C.].     |
| i. ♂ ad. sk.                       | Admiralty Islands.                                    | 'Challenger' Exped.              |
| k. Imm. sk.                        | New Britain.                                          | Rev. G. Brown [C.].              |
| l. ♀ ad. sk.                       | Port Moresby, S.E. New Guinea.                        | A. Goldie, Esq. [C.].            |
| m. ♀ ad. sk.                       | Woody Wallis I., Torres Str.                          | Earl of Derby [P.].              |
| n. ♂ ad. sk.                       | Port Essington, N. Australia.                         | Capt. W. Chambers,<br>R.N. [P.]. |
| o. ♂ ad. sk.                       | Cape York, N.E. Australia.                            | Gould Coll.                      |
| p-t. ♂ ♀ ad.,<br>juv. et pull. sk. | Raine I., N.E. Australia.                             | 'Challenger' Exped.              |
| u. ♂ ad. sk.                       | Brampton Shoals ( <i>Lieut.<br/>Richards</i> ).       | Seebohm Coll.                    |
| r. ♂ ad. sk.                       | Ovalau, Fiji Is., Feb. 15<br>( <i>E. L. Layard</i> ). | Tweeddale Coll.                  |
| w. ♂ ad. sk.                       | Huahine, Windward Is.                                 | Old Coll.                        |
| x. Skeleton.                       |                                                       | Old Coll.                        |
| y-a'. Sterna.                      | Raine I., N.E. Australia.                             | 'Challenger' Exped.              |

## Family IV. PHAETHONTIDÆ.

Nostrils pervious. Palatines completely separate one from the other; vomer present; a deep nasal hinge; carina extending nearly the whole length of the corpus sterni; free end of clavicle not provided with a facet for articulation with the acrocoracoid. (*W. P. Pycraft.*)

## 1. PHAETHON.\*

## Type.

|                                                                                                          |                        |
|----------------------------------------------------------------------------------------------------------|------------------------|
| <i>Lepturus</i> , <i>Moehr. Av. Gen.</i> p. 64 (1752); <i>Bris. Orn.</i> vi. p. 479 (1760) .....         | <i>P. æthereus</i> .   |
| <i>Phaëton</i> , <i>Linn. S. N.</i> i. p. 219 (1766) .....                                               | <i>P. æthereus</i> .   |
| <i>Phaethon</i> , <i>Illiger, Prodromus</i> , p. 280 (1811) .....                                        | <i>P. æthereus</i> .   |
| <i>Tropicophilus</i> , <i>Leach, fide Stephens in Shaw's Gen. Zool.</i> xiii. pt. i. p. 124 (1828) ..... | <i>P. æthereus</i> .   |
| <i>Phœnicurus</i> , <i>Bonap. Consp. Av.</i> ii. p. 183 (1855) ....                                      | <i>P. rubricauda</i> . |

Bill compressed, pointed, and slightly curved throughout, the cutting-edges of the mandibles serrated; nostrils distinct, linear; wings long, first primary rather longer than the second; tail composed of from 12 to 16 feathers, the middle pair being greatly elongate and attenuated; tarsus very short.

*Range.* Intertropical seas.

*Key to the Species.*

- I. Outer primaries with the outer web white to the base; elongate middle tail-feathers carmine with black shafts ..... *rubricauda*, p. 451.
- II. Outer primaries with the greater part of the outer web black; elongate middle tail-feathers white or apricot-colour.
  - A Bill mostly yellow; back uniform, not transversely barred with black; scapulars with the terminal half mostly black; outer web of first primary white at the tip for at least half an inch.
    - a. Black on outer web of outer primaries ceases an inch or more from the extremity, the third primary nearly as widely tipped with white as the first; basal two-thirds of both mandibles more or less blackish horn-colour.
    - a'. General colour of plumage pure white. *lepturus*, p. 453.

\* The following works refer to the osteology and anatomy, etc., of the genus — Brandt, *Mém Acad St Pétersb.* (6) v pt ii Livr ii pp. 122, 150, 190, pl x. (1839), *Livr.* v pp. 240-252, 274, pl v. (1840) [anatomy, etc.]; Nitzsch, *Pteryl.* Engl. ed. p. 151 (1867); Eyton, *Osteol Av* p. 219 (1867).

- b'*. General colour of plumage rich apricot or orange-salmon ..... *fulvus*, p. 455.
- b*. Black on outer web of first primary extends to within about half an inch of the extremity; on the second and fourth quills it reaches nearly to the tip, while the outer web of the third is either entirely black, or sometimes very narrowly tipped with white; bill uniform yellow, except above the nasal opening ..... *americanus*, p. 456.
- B.** Bill mostly red or coral-red; back and scapulars transversely barred with black; outer web of first primary black almost to the tip.
- c*. Bill uniform bright coral-red, a conspicuous black band behind the eye; middle pair of tail-feathers very long (about 26 inches) ..... *aethereus*, p. 457.
- d*. Bill orange or orange-red, dusky along the cutting-edges of the mandibles and at their extremities; black band behind eye rudimentary or absent; middle pair of tail-feathers less elongate, not exceeding 12 inches ..... *indicus*, p. 459.

1. *Phaëthon rubricauda*.

Le Paille-en-queue à brins rouges, *Buff. Hist. Nat. Ois.* viii. p. 357 (1781).

Paille-en-queue de l'Isle de France, *D'Aubent. Pl. Enl.* ix. pl. 74 [no. 979].

*Phaëton rubricauda*, *Bodd. Tabl. Pl. Enl.* p. 57 (1783); *G. R. Gray, Gen. B.* iii. p. 603 (1847); *Cassin, U.S. Expl. Exped.* p. 395 (1858); *Newton, Ibis*, 1861, p. 180 [Round I., off Mauritius: breeding]; *G. R. Gray, Ibis*, 1862, p. 250 [New Zealand]; *Schl. Mus. Pays-Bas*, vi. *Pelec.* p. 44 (1863); *Jerd. B. Ind.* iii. p. 849 (1864); *Finsch & Hartl. Beitr. Faun. Centralpolynes.* p. 248 (1867); *Beavan, Ibis*, 1868, p. 405 [Andamans]; *Schleg. & Pollen, Rech. Madagasc.* pt. ii. p. 140 (1868); *G. R. Gray, Hand-l. B.* iii. p. 125 (1871); *Heugl. Orn. N.O.-Afr.* iv. p. 1472 (1873); *Salvad. Ucc. Borneo*, p. 370 (1874); *Hume, Str. F.* ii. p. 322 (1874) [Bay of Bengal]; *Tristram, Ibis*, 1876, p. 266 [New Hebrides]; *Layard, Ibis*, 1876, p. 393 [Fiji]; *Streets, Bull. U.S. Nat. Mus.* vii. p. 25 (1877) [Christmas I.]; *Ramsay, P. Linn. Soc. N. S. W.* ii. p. 203 (1877) [N. Australia & S. New Guinea]; *Buller, Tr. N. Zeal. Inst.* x. p. 219 (1878); *Layard, Ibis*, 1878, p. 265 [Huon I., N. Caledonia: breeding]; *Finsch, J. f. O.* 1880, p. 296 [Caroline Is.]; *Layard, Ibis*, 1880, p. 233 [Loyalty Is.], 1881, p. 115 [Ponapé], 1882, pp. 542, 544 [Australia]; *Buller, Man. B. N. Zeal.* p. 97 (1882); *Oates, B. Burmah*, ii. p. 224 (1883); *Grandidier, Hist. Madagasc., Ois.* p. 697, pls. 281, 281 A (1885); *Crowfoot, Ibis*, 1885, p. 268 [Norfolk, Nepean & Philip Is.: breeds]; *Buller, B. N. Zeal.* 2nd ed. ii. p. 186 (1888); *North, Nests & Eggs B. Austr.* p. 362, pl. xix. fig. 1 (1889); *Seebohm, B. Jap.* p. 213 (1890); *id. Ibis*, 1890, p. 107 [Bonin & Krusenstern Is.], 1891, p. 192 [Volcano Is.]; *Wiglesw. Abh. Mus. Dresd.* 1890-91, p. 73; *Stejn. P. U.S.*



- Nat. Mus.* xiv. p. 492 (1801) [Japan]; *Lister*, *P. Z. S.* 1891, pp. 293, 300 [Phoenix Is.]; *Rothsch. Arif. Laysan*, pt. i. p. 33 (1893); *Reichenow, Vög. Deutsch-O.-Afr.* p. 24 (1894).
- Red-tailed Tropic Bird, *Lath. Gen. Syn.* iii. pt. ii. p. 619, pl. cv. (1785), *id. Gen. Hist. B.* x. p. 447, pl. 183 (1824); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. pl. 14 (1826).
- Black-billed Tropic Bird, *Lath. Gen. Syn.* iii. pt. ii. p. 619 (1785) *id. Gen. Hist. B.* x. p. 446 (1824).
- Phaeton phoenicurus*, *Gmel. S. N.* i. pt. ii. p. 583 (1788); *Lath. Ind. Orn.* ii. p. 894 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 39 (1790); *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 319, *Ois.* xvi. p. 283 (1790); *Vieill. N. Diet. d'Hist. Nat.* xxv. p. 466 (1817); *id. Gal. Ois.* ii. p. 199, pl. 279 (1825); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 128 (1826); *Ménéville, Icon. Règ. Anim., Ois.* pl. 65, fig. 3 (1829-38); *Lesson, Traité d'Orn.* p. 625 (1831); *Schinz, Nat. Abbild. Vög.* p. 388, pl. 134, fig. (1833); *Brandt, Mém. Acad. St. Pétersb.* (6) v. pt. 2, *Livr.* v. p. 252, pl. 1 (1840); *G. R. Gray, List of B.* pt. iii. p. 182 (1844); *Rupp. Vög. N.O.-Afr.* p. 140 (1845); *Gould, B. Austr.* vii. pl. 73 (1848); *Reichenb. Natatores*, pl. xxx nos. 350-51, pl. xxxv. nos. 2551-2 (1850); *Heugl. Vög. N.O.-Afr.* p. 71 (1856); *v. Pelz. SB. Ak. Wien*, xli. p. 331 (1860) [Norfolk I.]; *Hartl. Orn. Madagasc.* p. 86 (1861); *Kreffl. Ibis*, 1862, p. 192 [Brampton Shoals]; *Jouan, Mém. Soc. Cherbourg*, ix. p. 241 (1863) [New Caledonia]; *Walker, P. Z. S.* 1863, p. 379; *Roch & Newton, Ibis*, 1863, p. 176 [Madagascar]; *Layard, Ibis*, 1863, p. 247 [Rodriguez, Round I.: habits]; *Gould, Handb. B. Austr.* ii. p. 501 (1865); *Hartl. Vög. Madagasc.* p. 393 (1877); *Lister, P. Z. S.* 1888, p. 529 [Christmas I., Indian Ocean].
- Phaeton melanorhynchus*, *Gmel. S. N.* i. pt. ii. p. 582 (1788); *Lath. Ind. Orn.* ii. p. 894 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 40 (1790); *Brandt, Mém. Acad. St. Pétersb.* (6) v. pt. ii. p. 271 (1840).
- Phaeton melanorhyncos*, *Vieill. N. Diet. d'Hist. Nat.* xxv. p. 405 (1817); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 127 (1826).
- New Holland Tropic Bird, *Lath. Gen. Hist. B.* x. p. 448 (1824).
- Phaeton æthereus*, *Nutt. (nec Linn.) Man. Orn.* p. 503 (1844) [part]; *Aud. Orn. Brev.* iii. p. 412, pl. 262 (1835); *Reichenb. Natatores*, pl. xxix. no. 2290, *juv.* (1850); *Sclat. & Salv. Voy. Chall. Zool.* pt. ix. p. 118 (1880) [Raune I.].
- Phaeton nova-hollandie*, *Brandt. Mém. Acad. St. Pétersb.* (6) v. pt. ii. p. 272 (1840).
- Phaeton erubescens*, *Banks, Icon. ued.* pl. 31; *G. R. Gray, List of B.* pt. iii. p. 182 (1844); *id. Ibis*, 1862, p. 250.
- Phoenicurus rubricauda*, *Bonap. Consp. Av.* ii. p. 183 (1855).
- Phaeton candidus*, *Levr. & Des Murs (nec Temm.). Rev. Mag. Zool.* 1860, p. 442 [N. Caledonia]; *Layard. Ibis*, 1882, p. 541.
- Phaeton rubricaudatus*, *Finsch & Hartl. Vög. Ost-Afr.* p. 839 (1870). *Finsch, J. f. O.* 1872, pp. 33, 57 [Samoa].

*Adult.* General colour of the plumage pure white, with a beautiful pinkish tint in freshly-killed specimens; a black band on the sides of the head passes through the eye and terminates in a crescent-shaped mark above the gape; innermost secondaries with an irregular black band down the middle; flank-feathers with the middle greyish black; all the quills and outer tail-feathers with the upper surface of the shaft black, except at the extremity; middle tail-

feathers very long and much attenuated, the shafts and the parts of the webs immediately bordering them black; the remainder of the webs scarlet, shading into white at the base. Tail composed of 16 feathers. Iris black; bill orange-red; legs and upper part of the toes and webs faint blue, rest of toes black. Total length about 36 inches, culmen from feathers on forehead 2.55–2.65, wing 12.3–13.4, tail 17–18.5, tarsus 1.2.

*Young birds in first plumage.* Have the top of the head, back of the neck, back, rump, upper tail-coverts, scapulars, and many of the lesser and median wing-coverts barred with black; the four outer primaries and their coverts black along the shaft, the black increasing in width towards the extremity; the fifth and sixth primary-quills spotted with black near the extremity; the outermost secondaries black, margined with white; the tail-feathers spotted with black towards the extremity, the middle pair being white with black tips and not much longer than the second pair; the black patch in front of the eye rather more developed than in the adult. Bill blackish.

*Hab.* Tropical portions of the Pacific and Indian Oceans.

|                                 |                                                                |                             |
|---------------------------------|----------------------------------------------------------------|-----------------------------|
| <i>a-d.</i> ♂ ♀ ad. sk.         | Round Island, Mauritius.                                       | Hume Coll.                  |
| <i>e, f.</i> Ad. et juv. sk.    | Round Island, Nov. ( <i>Capt. Bewsher</i> ).                   | Shelley Coll.               |
| <i>g-k.</i> ♂ ♀ ad. et juv. sk. | Flying-fish Cove, Christmas I., Aug. ( <i>C. W. Andrews</i> ). | Dr. J. Murray [P.].         |
| <i>l.</i> Ad. st.               | Flying-fish Cove, Christmas I., Aug. ( <i>C. W. A.</i> ).      | Dr. J. Murray [P.].         |
| <i>m.</i> Ad. sk.               | Coast of Australia.                                            | Hardwicke Bequest.          |
| <i>n, o.</i> Ad. sk.            | Coast of Australia.                                            | Linnean Society [P.].       |
| <i>p.</i> ♀ juv. sk.            | Raine I., North-east Australia.                                | 'Challenger' Exped.         |
| <i>q.</i> Ad. sk.               | Norfolk Island.                                                | Howard Saunders, Esq. [P.]. |
| <i>r.</i> Ad. sk.               | New South Wales.                                               | Australian Museum [P.].     |
| <i>s.</i> Ad. sk.               | Howland Island.                                                | Hume Coll.                  |
| <i>t.</i> Ad. sk.               | Krusenstern Islands, spring ( <i>O. Snow</i> ).                | Seeböhm Coll.               |
| <i>u.</i> Ad. sk.               | Krusenstern Islands, spring ( <i>O. Snow</i> ).                | Howard Saunders, Esq. [P.]. |
| <i>v, w.</i> ♂ ad. et juv. sk.  | Society Islands.                                               | Hume Coll.                  |

## 2. *Phaëthon lepturus*.

Tropick Bird, *Edw. N. Hist. B.* iii. pl. 149 (1750).

Le Paille-en-cul blanc, *Briss. Orn.* vi. p. 485, pl. xlii. fig. 2 (1760).

Le Paille-en-queue blanc de l'Isle de l'Ascension, *D'Aubent. Pl. Enl.* ix. pl. 73 [no. 369].

Le petit Paille-en-queue, *Buff. Hist. Nat., Ois.* viii. p. 355 (1781).

White Tropic Bird, *Lath. Gen. Syn.* iii. pt. ii. p. 618 (1785).

*Phaëton lepturus*, *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 319, *Ois.* xvi. p. 280 (1799).

*Phaëton candidus*, *Temm. Man. d'Orn.* i. p. cxii (1820); *G. R. Gray, List of B.* pt. iii. p. 182 (1844); *id. Gen. B.* iii. p. 663, pl. clxxxiii. (1847); *Blyth, Cat. Mus. As. Soc.* p. 296 (1849); *Jouan, Mém.*

- Soc. Cherbourg*, ix. p. 241 (1863) [New Caledonia]; *Schleg. Mus. Pays-Bas*, vi. *Pelec.* p. 43 (1863); *Jerd. B. Ind.* iii. p. 850 (1864); *Schleg. P. Z. S.* 1866, p. 426 (Réunion); *Schleg. & Pollen, Rech. Madagasc.* pt. ii. p. 138 (1868); *Hartl. & Finsch, P. Z. S.* 1868, p. 9 [Pelew Is.]; *Finsch, J. f. O.* 1872, pp. 33, 57 [Samoa]; *Layard, Ibis*, 1876, p. 393 [Fiji]; *Hartl. Vög. Madagasc.* p. 394 (1877); *Finsch, J. f. O.* 1880, pp. 296, 309 [Caroline Is.]; *Nicholson, Ibis*, 1882, p. 70 [West I., Java]; *Salvad. Orn. Pap.* iii. p. 425 (1882); *Grandisier, Hist. Madagasc.*, Ois. p. 609, pls. 279-280 (1885); *Stejn P. U.S. Nat. Mus.* xiv. p. 493 (1891) [Japan].
- Common Tropic Bird A, *Lath. Gen. Hist. B.* x. p. 445 (1824).
- Phaëton æthereus*, var., *Griff. ed. Cuv.* pl. facing p. 657 (1829).
- Phaëton albus*, *Schinz, Naturg. Abbild. Vög.* p. 389 (1833).
- Phaëton flavirostris*, *Brandt, Bull. Acad. St. Pétersb.* ii. p. 349 (1837); *id. Mém. Acad. St. Pétersb.* (6) v. pt. ii. Livr. v. p. 263, pls. 3, 4 (1840) [Réunion]; *Reichenb. Natatores*, pl. xxx. nos. 853-4 (1850); *Newton, Ibis*, 1861, pp. 116, 181, 276 [Mauritius]; *Hartl. Orn. Madagasc.* p. 86 (1861); *Roch & Newton, Ibis*, 1863, p. 175 [Madagascar]; *Layard, Ibis*, 1863, p. 248 [habits], *Beavan, Ibis*, 1867, p. 334 [Andaman Is.], *Newton, Ibis*, 1867, p. 345 [Seychelles]; *G. R. Gray, Hand-l. B.* iii. p. 124 (1871); *Hume, Str. F.* ii. p. 323 (1874) [Rose Island], v. p. 498 (1877) [Cachar]; *Ramsay, P. Linn. Soc. N. S. W.* iv. p. 84 (1879) [Savo, Solomon Is.]; *Penrose, Ibis*, 1879, p. 277 [Ascension]; *Legge, B. Ceylon*, iii. p. 1172 (1880); *Sclat. & Salv. Voy. Chili, Zool.* pt. ix. p. 119 (1880); *Finsch, Ibis*, 1880, p. 333 [Marshall Group], p. 434 [Gilbert Is.], 1881, p. 109 [Kushai I.], p. 115 [Ponapé]; *Tristram, Ibis*, 1882, p. 144 [Savo, Solomon Is.]; *Oates, B. Burmah*, ii. p. 225 (1883).
- Phaëton edwardsii*, *Brandt, Mém. Acad. St. Pétersb.* (6) v. pt. ii. p. 271 (1840); *Reichenb. Natatores*, pl. xxx. no. 2208 (1850).
- Lepturus candidus*, *Bonap. Consp. Av.* ii. p. 183 (1855).
- ? *Phaëton æthereus*, *Ramsay, P. Linn. Soc. N. S. W.* ii. p. 203 (1877) [N. Australia & S. New Guinea].

**Adult.** General colour of the plumage pure white; a black band bordering the sides of the head passes through the eye and terminates in a crescent-shaped mark above the gape; a black band along the wing formed by the black tips of the median wing-coverts; scapulars and innermost secondaries with the terminal half of both webs obliquely black; four outermost primaries with the outer web and a portion of the inner next the shaft black to within about an inch and a half of the extremity; fifth with only a narrow line of black along the shaft, and the outer web black for a short distance from its base; long flank-feathers broadly striped down the middle of the terminal half with greyish black; shafts of quills and tail feathers black on the upper surface, white towards the tip. Tail composed of 12 feathers. Basal two-thirds of the upper and lower mandibles dark blackish horn; culmen, cutting-edges, and terminal third yellow. Total length about 30 inches, culmen 1·8-2, wing 10-10·6, tail 17·3-21, tarsus 0·8-0·9.

**Young.** Top of the head, back, scapulars, innermost secondaries, rump, upper tail-coverts, and flanks barred with black, most of the

bars being subcrescentic in shape; otherwise the plumage is much like that of the adult.

*Hab.* Inter-tropical seas, except the east coast of North America

|                                   |                                                 |                             |
|-----------------------------------|-------------------------------------------------|-----------------------------|
| <i>a, b.</i> Ad. sk.              | Fernando Noronha.                               | 'Challenger' Exped.         |
| <i>c.</i> Vix ad. sk.             | Ascension Island.                               | J. Noble, Esq. [P.].        |
| <i>d.</i> Ad. sk.                 | Ascension I. ( <i>Lieut. M. Squire, R.N.</i> ). | Howard Saunders, Esq. [P.]. |
| <i>e.</i> Ad. sk.                 | Ascension I.                                    | W. E. de Winton, Esq. [P.]. |
| <i>f, g.</i> ♂ ad. sk.            | Boatswain-bird I., Ascension.                   | 'Challenger' Exped.         |
| <i>h.</i> ♂ ad. sk.               | I. of St. Thomas, Feb. 27 ( <i>F. Newton</i> ). | Lisbon Museum [P.].         |
| <i>i.</i> ♀ ad. sk.               | I. of Cabras.                                   | Lisbon Museum [P.].         |
| <i>k.</i> ♀ imm. sk.              | Indian Ocean, S.E. of Madagascar, Oct. 29.      | Earl of Crawford [P.].      |
| <i>l-n.</i> ♂ ♀ ad. sk.           | Rodriguez ( <i>Rev. H. H. Slater</i> ).         | Transit of Venus Exped.     |
| <i>o, p.</i> Ad. sk.              | Round I., Nov. ( <i>Capt. Bewsher</i> ).        | Shelley Coll.               |
| <i>q, r.</i> Ad. sk.              | Mauritius.                                      | Hume Coll.                  |
| <i>s-u.</i> Ad. sk.               | Réunion.                                        | M. Van Dam [P.].            |
| <i>v.</i> ♂ ad. sk.               | Seychelles.                                     | Shelley Coll.               |
| <i>w.</i> ♂ juv. sk.              | Cachar ( <i>J. Inglis</i> ).                    | Hume Coll.                  |
| <i>x.</i> Ad. sk.                 | Pelew Islands ( <i>O. Finsch</i> ).             | Hume Coll.                  |
| <i>y.</i> ♀ ad. sk.               | At sea to the north of New Guinea, March 19.    | 'Challenger' Exped.         |
| <i>z.</i> ♀ ad. sk.               | Tongataboo.                                     | 'Challenger' Exped.         |
| <i>a'.</i> Ad. sk.                | Samoa.                                          | Rev. J. B. Stair [P.].      |
| <i>b', c'.</i> Ad. sk.            | Samoa.                                          | Rev. S. J. Whitmee [C.].    |
| <i>d'.</i> Ad. sk.                | Upolu, Samoa.                                   | Howard Saunders, Esq. [P.]. |
| <i>e', f'.</i> Ad. sk.            | South Seas.                                     | Old Coll.                   |
| <i>g'.</i> Skull.                 |                                                 | 'Challenger' Exped.         |
| <i>h'-k'.</i> Skeleton, 2 sterna. | Rodriguez ( <i>Rev. H. H. Slater</i> ).         | Transit of Venus Exped.     |
| <i>l'.</i> Skeleton.              |                                                 | Salvin-Godman Coll.         |

### 3. Phaëthon fulvus.

Le Paille-en-cul fauve (*Lepturus fulvus*), *Briss. Orn.* vi. p. 489 (1760).

Yellow Tropic Bird, *Lath. Gen. Syn.* iii. pt. ii. p. 619 (1785).

Phaëton fulvus, *Brandt, Mém. Acad. St. Petersb.* (6) v. pt. ii. p. 269 (1840).

Phaëton flavirostris, *Reichenb. (nec Brandt) Natatores*, pl. xxx. fig. 852 (1850); *Lister, P. Z. S.* 1888, p. 528 [Christmas I., Indian Ocean].

Phaëton flavo-aurantius, *Lawr. Ann. Lyc. N. York*, vii. p. 142 (1862); *Grant, Bull. B. O. C.* no. xlix. p. xxiii (1897) [Christmas I., Indian Ocean].

*Adult.* Markings exactly similar to those of *P. lepturus*, but the general colour of the plumage rich salmon, inclining to orange, somewhat paler on the under surface. Tail composed of 12 feathers.

Basal two thirds of the upper and lower mandibles dark blackish horn; ridge of culmen, cutting-edges, and tips of mandible yellow; tarsi and basal half of toes yellowish, remaining portion and claws black. Total length about 32 inches, culmen from feathers on forehead 2, wing 10·5–10·7, tail 21, tarsus 0·75.

*Hab.* Christmas Island, Indian Ocean.

- a. ♂ ad. sk. Christmas I., Oct. 5. J. J. Lister, Esq. [P].  
 b-d. ♂ ♀ ad. sk. Flying-fish Cove, Christmas I., Aug. (C. W. Andrews). Dr. J. Murray [P].

#### 4. *Phaëthon americanus*.

Tropick Bird, *Catesb. Car.* ii. App. pl. 14 (1748) [Bermuda; Porto Rico].

*Phaeton æthereus*, *Aud. (nec Linn.) B. Amer.* vii. p. 223, pl. 427. (1839).

*Phaeton flavirostris*, *Bryant (nec Brandt) P. Bost. Soc.* vii. p. 128 (1859) [Bahamas: habits; breeding]; *Baird, B. N. Amer.* p. 885 (1860); *Albrecht, J. f. O.* 1861, p. 57 [Bahamas]; *Gundl. J. f. O.* 1861, p. 348, 1862, pp. 96, 190 [Cuba]; *Salvin, Ibis*, 1870, p. 116 [Costa Rica]; *Coues, Key N. Amer. B.* p. 307 (1872); *Gundl. J. f. O.* 1875, p. 403 [Cuba: habits], 1878, p. 191 [Porto Rico]; *Cory, B. Bahama Is.* p. 204 (1880); *Coues, Bull. Nutt. Orn. C.* v. p. 63 (1880) [Western New York]; *Maynard, B. E. N. Amer.* p. 473 (1881); *Coues, Key N. Amer. B.* p. 732 (1884); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 186 (1884); *Reid, Bull. U.S. Nat. Mus.* xv. p. 263 (1884) [Bermuda]; *Cory, B. Haiti & S. Domingo*, p. 175 (1885); *id. Auk*, v. p. 73 (1888) [Bahamas; Antilles]; *Ridgw. Mun. N. A. B.* p. 74 (1889); *Cory, B. W. Ind.* p. 274 (1889); *Scott, Auk*, viii. pp. 249, 256 (1891) [Jamaica]; *Cory, Cat. W. Ind. B.* p. 84 (1892); *A. O. U. Check-l.* p. 39 (1895); *Prentiss, Auk*, xiii. p. 239 (1896) [Bermuda].

*Phaeton americanus*, *Grant, Bull. B. O. C.* no. xlix p. xxiii (1897) [Bermuda to West Indies].

*Adult.* Closely allied to *P. lepturus*, from which it differs in the following particulars:—the black on the first primary extends to within half an inch of the extremity, on the second and fourth it nearly reaches the tip; the third quill is entirely black or sometimes very narrowly tipped with white, and the fifth has the outer web black to within about an inch of the extremity. Bill uniform yellow, with little or no trace of dusky on the base of either mandible. Tail composed of 12 feathers. Total length about 30 inches, culmen from feathers on forehead 2·21, wing 10·5–11·2, tail 16·8–21·5, tarsus 0·85–0·90.

*Hab.* East coast of N. America from Bermuda to the West Indies.

- a. Ad. sk. Bermuda. Capt. S. G. Reid [P].  
 b-n. ♂ ♀ ad. sk. Bermuda, May (C. H. Mer- Salvin-Godman Coll.  
       et st. riam). (Types of the species.)  
 o. Ad. sk. West Indies (Sir G. Kuyler). Howard Saunders,  
       Esq. [P].  
 p. ♂ ad. sk. Dominica, West Indies (F. A. Salvin-Godman Coll.  
       Ober).

- ♀, r. ♂ ad. sk. St. Vincent, W. I., Feb. 3 Salvin-Godman Coll.  
(D. W. Smith).  
♂-♀ Ad., imm. et Bermuda, May, June. 'Challenger' Exped.  
embryo (in spirit).

5. *Phaëthon æthereus*.

- Le Paille-en-cul, *Briss. Orn.* vi. p. 480, pl. xlii. fig. 1 (1760).  
Paille-en-queue de Cayenne, *D'Aubent, Pl. Enl.* ix. pl. 72 [no. 998].  
Le Grand Paille-en-queue, *Buff. Hist. Nat. Ois.* viii. p. 354,  
pl. xxviii. (1781).  
Common Tropic-bird, *Lath. Gen. Syn.* iii. pt. ii. p. 615 (1785); *id.*  
*Gen. Hist. B.* x. p. 443 (1824).  
*Phaëton æthereus*, *Linn. S. N.* i. p. 219 (1766); *Gmel. S. N.* i. pt. ii.  
p. 581 (1788) [nec β, γ]; *Lath. Ind. Orn.* ii. p. 893 (1790);  
*Bonnat. Tabl. Encycl. Méth.* i. p. 38 (1790); *Lacép. & Daudin,*  
*in Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 319, *Ois.* xvi.  
p. 279 (1799); *Leach, Zool. Misc.* ii. p. 140, pl. 113 (1815); *Vieill.*  
*N. Dict. d'Hist. Nat.* xxv. p. 466 (1817); *Steph. in Shaw's Gen.*  
*Zool.* xiii. pt. i. p. 125 (1826); *Lesson, Traité d'Orn.* p. 625,  
pl. 114. fig. i. (1831); *Schinz, Nat. Abbild. Vög.* p. 389, pl. 133,  
fig. (1833); *D'Orb. in Sagra, Hist. Cuba*, p. 312 (1839); *Brandt,*  
*Mém. Acad. St. Pétersb.* (6) v. pt. ii. Livr. v. p. 257, pl. ii. (1840);  
*G. R. Gray, List of B.* pt. iii. p. 182 (1844); *Tschudi, Faun. Peru.,*  
*Orn.* p. 314 (1845); *Gosse, B. Jamaica*, p. 430 (1847); *G. R. Gray,*  
*Gen. B.* iii. p. 663 (1847); *Reichenb. Natatores*, pl. xxx. no. 349  
(1850); *Bonap. Consp. Av.* ii. p. 183 (1855); *Hartl. Syst. Orn.*  
*W.-Afr.* p. 257 (1857); *Newberry, Rep. Expl. Surr.* vi. pt. iv.  
p. 106 (1857); *Cassin, U.S. Expl. Exped.* p. 394 (1858); *Jones,*  
*Nat. Bermuda*, p. 52 (1859); *A. & E. Newton, Ibis*, 1859, p. 370;  
*Gunll. J. f. O.* 1862, p. 96 [Cuba]; *Schl. Mus. Pays-Bas*, vi. *Pelec.*  
p. 43 (1863); *Fitz. Atl. Nat. Vög.* fig. 336 (1864); *Taylor, Ibis*,  
1864, p. 172 [West Indies]; *Hartl. Ibis*, 1864, p. 232 [Fiji Is.];  
*Dohrn, P. Z. S.* 1866, p. 331 [Prince's I.]; *Finsch & Hartl. Beitr.*  
*Faun. Centralpolynes.* p. 250 (1867); *Frütsch, Nat. Vög. Europa's*,  
p. 453 (1870); *Melliss, Ibis*, 1870, p. 105 [St. Helena]; *G. R.*  
*Gray, Hand-l. B.* iii. p. 124 (1871); *Dohrn, J. f. O.* 1871, p. 8  
[Cape Verde Is.]; *Finsch, J. f. O.* 1872, pp. 33, 57 [Samoa];  
*Layard, Ibis*, 1876, p. 393 [Fiji]; *Salvin, Tr. Z. S.* ix. p. 497  
(1876) [Galapagos]; *Penrose, Ibis*, 1879, p. 276 [Ascension];  
*Sclat. & Salo. Voy. Chall., Zool.* pt. ix. p. 118 (1880) [Ascension];  
*Finsch, J. f. O.* 1880, p. 310 [Caroline Is.]; *id. Ibis*, 1880, p. 333  
[Marshall Group], p. 434 [Gilbert Is.], 1881, p. 109 [Kushai I.];  
*Hume, Str. F.* x. p. 146 (1881); *Baird, Brew. & Ridgw. Water-B.*  
*N. Amer.* ii. p. 189 (1884); *Coues, Key N. Amer. B.* p. 732 (1884);  
*Tacz. Orn. Pérou*, iii. p. 436 (1886); *Ridgw. Man. N. A. B.* p. 74  
(1887); *Cory, Auk*, v. p. 74 (1888) [West Indies]; *Sharpe, J. Linn.*  
*Soc., Zool.* xx. p. 480 (1888) [Fernando Noronha]; *Cory, B. W.*  
*Ind.* p. 275 (1889); *Anthony, P. Calif. Acad.* (2) ii. p. 86 (1889)  
[Lower California]; *Bryant, P. Calif. Acad.* (2) ii. p. 253 (1890)  
[Lower California]; *Cory, Cat. W. Ind. B.* p. 84 (1892); *Berlepsch*  
& *Stolz. P. Z. S.* 1892, p. 399 [Peru]; *Sclater, P. Z. S.* 1892,  
p. 500 [Anguilla, W. I.]; *Hartwig, Orn. Monatsber.* i. p. 172  
(1893) [Madeira]; *A. O. U. Check-l.* p. 39 (1895); *Alexander, Ibis*,  
1898, pp. 90, 99, 109, 117 [Cape Verde Is.].  
*Phaëton catesbyi*, *Brandt, Mém. Acad. St. Pétersb.* (6) v. pt. ii.  
p. 270 (1840) [Bermuda; Porto Rico].

*Adult.* General colour white; a black band bordering the sides of the head passes through the eye and terminates in a crescent-shaped mark above the gape; back and sides of the neck, back, rump, upper tail-coverts, scapulars, and most of the lesser and median wing-coverts barred with black; the five outermost primaries with the outer web and part of the inner web next the shaft black, only the extreme tip being white; some apparently fully adult specimens have the third quill partially, and the fourth and fifth entirely margined on the outer web with white; the remaining primary-quills with a black median stripe extending to within about an inch of the tip; outer primary-coverts, innermost secondaries and their coverts, mostly black, margined with white; long flank-feathers with blotched greyish-black bars; outer tail-feathers with a few irregular black markings near the shaft; the upper surface of the shafts black, white at the extremity. Tail composed of 14 feathers. Iris black; tarsi and upper part of toes yellow, rest of toes and claws black; bill bright coral-red.

*Adult male.* Total length about 40 inches, culmen from feathers on forehead 2.4-2.5, wing 11.5-11.7, tail 26, tarsus 1.15-1.2.

*Adult female.* Total length about 40 inches, culmen from feathers on forehead 2.6, wing 13, tail imperfect, tarsus 1.15.

*An immature bird* differs slightly from the most adult in having the second primary-quill partially, and the third, fourth, and fifth wholly margined with white on the outer web; the markings on the innermost secondaries take the form of irregular blotched black bars; the bill in the dried skin is orange-yellow, tinged with red.

*Quite young birds* with the quills half grown have the plumage very similar to that of the adult, the primaries and secondaries being similarly marked, but the tail-feathers, except the two outer pairs, are blotched with black at the extremity, and the long flank-feathers are mostly black, toothed with white on the margins. Bill yellow.

*Hab.* Tropical portions of the Pacific and Atlantic Oceans.

|                                    |                                               |                             |
|------------------------------------|-----------------------------------------------|-----------------------------|
| <i>a</i> Imm. sk.                  | Acajutla, San Salvador, Central America.      | Salvin-Godman Coll.         |
| <i>b</i> Juv. sk.                  | Nicoya, Costa Rica, March ( <i>E. Arce</i> )  | Salvin-Godman Coll.         |
| <i>c, d.</i> ♂ ad. sk.             | Anguilla, W. Indies ( <i>W. R. Elliott</i> ). | Salvin-Godman Coll.         |
| <i>e</i> Ad. sk.                   | Redo da Island, W. I. ( <i>Spence</i> )       | Salvin-Godman Coll.         |
| <i>f, g.</i> Ad. sk.               | Guadeloupe, W. I. ( <i>F. A. Ober</i> ).      | Salvin-Godman Coll.         |
| <i>h.</i> Ad. sk.                  | St. Lucia, W. I. ( <i>Semper</i> ).           | Salvin-Godman Coll.         |
| <i>i.</i> Ad. sk.                  | Maraulam, S. America ( <i>R. Bendeborn</i> ). | Salvin-Godman Coll.         |
| <i>k, l.</i> Ad. sk.               | Fernando Noronha.                             | H. N. Ridley, Esq. [P.].    |
| <i>m.</i> ♀ ad sk.                 | Boatswain-bird I., Ascension                  | 'Challenger' Exped.         |
| <i>n-p.</i> Ad., imm. et pull. sk. | Boatswain-bird I., Ascension                  | Howard Saunders, Esq. [P.]. |

|                              |                                                                 |                           |
|------------------------------|-----------------------------------------------------------------|---------------------------|
| <i>g.</i> Ad. sk.            | Boatswain-bird I., Ascension,<br>Jan. 4 ( <i>Dr. D. Gill</i> ). | Dr. Frank Penrose<br>[P.] |
| <i>r.</i> Skeleton.          | [Ascension I.]                                                  | 'Challenger' Exped.       |
| <i>s, t.</i> Ad. in spirits. | [Ascension I.]                                                  | 'Challenger' Exped.       |

6. *Phaëthon indicus*. (Plate VI.\*)

*Phaëton æthereus*, *Sundev. (nec Linn.) Ann. Mag. N. H.* xix. p. 234 (1847); *Blyth, Cat. Mus. As. Soc.* p. 296 (1849); *id. Ibis*, 1867, p. 178 [Bay of Bengal]; *Finsch & Hartl. Vög. Ost-Afr.* p. 840 (1870) [part]; *Heugl. Orn. N.O.-Afr.* iv. p. 1467 (1873) [part]; *Hume, Str. F.* i. pp. 236, 441 (1873) [Gulf of Oman], ii. p. 323 (1874) [Andamans, Cocos]; *Blanf. E. Pers.* ii. p. 299 (1876).

*Phaëton rubricauda*, *Blanf. (nec Bodd.) Zool. Abyss.* p. 441 (1870) [Annesley Bay].

*Phaëton indicus*, *Hume, Str. F.* iv. p. 481 (1876) [Mekran Coast]; *Butler, Str. F.* v. p. 302 (1877) [Mekran Coast]; *Hume & Davison, Str. F.* vi. p. 493 (1878) [Tenasserim]; *Butler, Str. F.* viii. p. 388 (1879) [Coast of Sind]; *id. Cat. B. Sind*, p. 81 (1879); *id. Cat. B. S. Bombay*, p. 112 (1880); *Legge, B. Ceylon*, iii. p. 1173 (1880); *Hume, Str. F.* x. p. 147 (1881); *Oates, B. Burmah*, ii. p. 226 (1883); *Yerbury, Ibis*, 1886, p. 23 [Aden]; *Sharpe, Ibis*, 1886, p. 168 [Muscat]; *Barnes, Ibis*, 1893, p. 179 [Aden]; *Yerbury, Ibis*, 1896, p. 40.

*Adult*. Much like *P. æthereus*, but smaller and readily distinguished by the following particulars:—The black band on the sides of the head is nearly obsolete behind the eye, only the bases of the feathers being black; the middle pair of tail-feathers always comparatively short; and the bill is orange-red, with the cutting-edges and tips of the mandibles blackish. Tail composed of 14 feathers. Iris blackish brown; bill orange or orange-red, dusky round the nostrils, along the cutting-edges of the mandible and at their extremities; legs and upper part of toes greyish white; rest of toes and claws black (*A. O. Hume*).

*Adult male*. Total length about 24 inches, culmen from feathers on forehead 2.15–2.4, wing 10.6–11.6, tail 7.5–9.6, tarsus 0.9–1.

*Adult female*. Total length about 24 inches, culmen from feathers on forehead 2.2–2.3, wing 10.9–11.4, tail 7.5–11.9, tarsus 0.95.

*Hab.* Northern parts of the Indian Ocean, from the Red Sea and Persian Gulf to the Straits of Malacca.

|                         |                                                                         |                                       |
|-------------------------|-------------------------------------------------------------------------|---------------------------------------|
| <i>a.</i> ♀ ad. sk.     | Annesley Bay, Red Sea, Jan. 30.                                         | W. T. Blanford, Esq.<br>[C.]          |
| <i>b.</i> Ad. sk.       | Muscat, Persian Gulf.                                                   | Col. Miles [P.]                       |
| <i>c-h.</i> ♂ ♀ ad. sk. | Mekran Coast, off Oemara,<br>Feb. ( <i>A. O. H.</i> ).                  | Hume Coll.<br>(Types of the species.) |
| <i>i-l.</i> ♂ ♀ ad. sk. | Mekran Coast, May 14 ( <i>E. A.</i><br><i>Butler</i> ).                 | Hume Coll.                            |
| <i>m.</i> ♂ ad. sk.     | Near Pigeon I., off the coast<br>of Kanara, Feb. 9 ( <i>A. O. H.</i> ). | Hume Coll.                            |
| <i>n.</i> Ad. sk.       | Straits of Malacca ( <i>Dr. Cantor</i> ).                               | India Museum [P.]                     |

\* The plate is not quite correct; the black band on the sides of the head should be nearly obsolete behind the eye.



## Family V. PELECANIDÆ.

Palatines fused in the middle line, and provided with a deep median keel. Furculum fused with the carina sterni, which is about three quarters of the length of the corpus sterni. (*W. P. Pyecraft.*)

### 1. PELECANUS.\*

|                                                                                       | Type.                       |
|---------------------------------------------------------------------------------------|-----------------------------|
| <i>Onocrotalus</i> , <i>Brisson, Orn.</i> vi. p. 519 (1760) ..                        | <i>P. onocrotalus</i> .     |
| <i>Pelecanus</i> , <i>Linn. S. N.</i> i. p. 215 (1766).....                           | <i>P. onocrotalus</i> .     |
| <i>Cyrtopelicanus</i> , <i>Reichenb. Naturl. Syst. Vög.</i><br>p. vii (1853) .....    | <i>P. erythrorhynchus</i> . |
| <i>Leptopelicanus</i> , <i>Reichenb. Naturl. Syst. Vög.</i><br>p. vii (1853) .....    | <i>P. fuscus</i> .          |
| <i>Catoptropelicanus</i> , <i>Reichenb. Naturl. Syst. Vög.</i><br>p. vii (1853) ..... | <i>P. conspicillatus</i> .  |

Bill greatly elongate and much depressed, narrower and higher at the base, broader and flattened towards the end, composed of a median bar, running the whole length of the bill, and terminating in a strongly hooked nail, and of two lateral portions divided from the median bar by a very narrow groove, in the basal part of which the small nostril opens. Ramus of lower mandible thin and flexible, supporting a very large distensible gular pouch. Wings very large; tail short, composed of 22 or 24 feathers. Tarsi compressed, reticulate.

*Range.* Tropical and temperate regions of the Old and New Worlds.

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\* The following works refer to the osteology and anatomy, etc., of the group:—*Owen, P. Z. S.* 1835, p. 9 [anatomy of *P. rufescens* ♀], *Martin, P. Z. S.* 1835, p. 16 [anatomy of *P. rufescens* ♂], *Brandt, Mem. Acad. St. Petersb.* (6) v. pt. ii. larr. ii pp. 110, 141, 183, pls. vii & viii. (1839) [osteology of *P. crispus*], *Parker, P. Z. S.* 1860, p. 328 [anatomy of *P. onocrotalus*], *Hunter, Ess. Obs. Nat. Hist.* ii. p. 326 (1861) [anatomy of *P. onocrotalus* and *P. fuscus*], *Gulliver, P. Z. S.* 1862, p. 102, and 1875, p. 488 [red corpuscles in *P. onocrotalus*], *Milne-Edw. Ann. Sci. Nat.* (5) iii. pp. 137-142 (1865) [air-cells], *Giebel, Zeit. ges. Naturw.* 1865, pp. 250-257 [osteology of *P. erythrorhynchus*, *P. crispus*, *P. onocrotalus*], *Huxley, P. Z. S.* 1867, p. 438, figs. 20, 20a [skull of *P. onocrotalus*], *Eyton, Osteol. Av.* p. 219, pls. 7 L, 58, fig. 2 (1867), *Nitzsch, Pteryl., Engl. ed.* p. 149 (1867); *Garrod, P. Z. S.* 1876, p. 335 [*P. rufescens* and *P. onocrotalus* have left carotid only], p. 340 [pectoral muscle], and p. 342 [stomach], *Ahrz, Bull. Soc. Zool. Fr.* ii. p. 287 (1877) [anatomy], *Mivart, Tr. Z. S.* x. pp. 315-378, pls. lv. & lvi, figs. 1-6 (1878) [skeleton], *Forbes, Ibis*, 1881, p. 23 [anatomy], *Nathusius, J. f. O.* 1882, pp. 285-292 [shell of egg], *Shufeldt, P. U. S. Nat. Mus.* xi. pp. 253-315 (1888) [osteology], *id. Ibis*, 1894, p. 366 [anatomy of *P. fuscus*], *id. J. Anat. Phys.* xxxiii pp. 165-186, pls. 400-427,



- B. Base of lower mandible feathered; culmen ornamented with a horny excrescence in the breeding-season ..... *erythrorhynchus*, p. 481.  
 II. A ring of feathers surrounding the naked ocular space ..... *conspicillatus*, p. 488.

### 1. *Pelecanus onocrotalus* \*.

- Onocrotalus*, *Gesner*, *Av.* iii p. 605, fig. i. & *App.* p. 94, fig. i. (1555).  
 The Pelican, *Edwards*, *Nat. Hist. B.* ii. p. 92, pl. 92 (1747) [S. Africa].  
 Le Pélican, *Brisson*, *Orn.* vi p. 519 (1760); *D'Aubent. Pl. Ent.* ix. p. 169, pl. 63 [no. 87]; *Buff.* *Hist. Nat.*, *Ois.* viii. p. 282, pl. xxv. (1781).  
*Pelecanus onocrotalus*, *a. orientalis*, *Linn.* *S. N.* i. p. 215 (1766).  
 Great White Pelican, *Lath.* *Gen. Syn.* vi. p. 575 (1785).  
*Pelecanus onocrotalus*, *Gmel.* *S. N.* i. pt. ii. p. 569 (1788); *Latham*, *Ind. Orn.* ii p. 882 (1790) [part]; *Bonnat. Tabl. Encycl. Méth.* i. p. 42, pl. 13, fig. 2 (1790); *Lacép. & Daudin*, in *Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 320, *Ois.* xvi. pp. 204, 224 (1799); *Bechst.* *Orn. Deutschl.* p. 390 (1802); *Lath. Gen. Syn., Suppl.* ii. p. 362 (1802); *Meyer & Wolf*, *Tasch. der Deutsch. Voy.* p. 574 pl. (1810); *Pallas*, *Zoogr. Rosso-As.* ii. p. 202 (1811) [part]; *Vieill. N. Dict. d'Hist. Nat.* xxv p. 138 (1817); *Cuv. Règ. Anim., Ois.* p. 523 (1817); *Temm. Man. d'Orn.* ii. p. 891 [part] (1820), & iv. p. 560 (1840); *Steph.* in *Shaw's Gen. Zool.* xiii. pt. i. p. 109, pl. 12 (1825); *Roux.* *Orn. Prov.* ii. p. 342 (1825); *Werner.* *Atl. Orn. d'Eur.*, *Ord.* 15, pl. 85 (1828); *Cuv. Règ. Anim., Ois.* p. 561 (1829); *Brehm.* *Vög. Deutschl.* p. 824, pl. 40, fig. 1 (1831); *Less.* *Fruite d'Orn.* p. 602, pl. 116 fig. 1 (1831); *Menet.* *Cat. Rais.* p. 55 (1832); *Brehm.* *Isis*, 1832, p. 1108; *Bruch.* *Isis*, 1832, p. 1108; *Bonap.* *Isis*, 1832, p. 1191; *Brandt.* *Anim. Rossic. Nov.*,

### \* *PELECANUS SHARPEI*.

- Pelecanus sharpei*, *Bocage*, *P. Z. S.* 1870, pp. 173, 409 [Angola], *id.* *J. Acad. Sc. Lib.* xi. p. 166 (1871), *Slater*, *P. Z. S.* 1871, p. 632, fig. 1, pl. li, *Heugl.* *Orn. NO-Afr.* iv p. 1502 (1873), *Bocage*, *J. f. O.* 1876, pp. 292, 434; *id.* *Orn. Angola*, p. 525 (1881), *Von Washington*, *Ann. Hofmus. Wien*, in p. 63, fig. (1889).

*Pelecanus onocrotalus* var. *sharpei*, *Dubois*, *Bull. Mus. Belg.* ii. p. 8 (1883).

[*Adult male*] Above white, lower neck, interscapular region, and back slightly tinged with rose-colour below washed with cinnamon, a large patch of rufous chestnut on the breast, forehead much swollen; feathers on the forehead ending in a point, a short erect crest on the nape. Bill yellow, the middle and sides blackish, tip and margins red, naked cheeks reddish, gular sac greenish yellow feet dark flesh.

*Hab.* Angola, S.W. Africa

I have not examined typical examples of this form, and am uncertain whether it is really a distinct species or merely a colour-variety of *P. onocrotalus*. The cinnamon-coloured underparts may be caused by the presence of iron in the water frequented by these birds. As shown, when describing the latter species, the short erect crest is merely a characteristic of the male sex and not a specific character as suggested by Professor Barboza du Bocage (*cf.* *P. Z. S.* 1870, p. 173).

- Aves*, fasc. i. p. 44, pl. v. (1836); *Rüpp. Mus. Senck.* ii. p. 185 (1837); *Gould, B. Eur.* v. pl. 405 (1837); *Licht. Abh. Akad. Berl.* 1838, p. 436, pl. iii. fig. 1; *Demid. Voy. Russ. Mérid.* iii. p. 295 (1840); *Keys. u. Blas. Wirbelth.* p. 89 (1840); *Benoit, Orn. Sicil.* p. 190 (1840); *Schinz, Europ. Fauna*, i. p. 365 (1840); *Naumann, Vög. Deutschl.* xi. p. 150, pl. 282 (1842); *Drapiez, Dict. Sci. Nat.* viii. p. 384 (1842); *G. R. Gray, List of B.* pt. iii. p. 189 [part]; *id. Gen. B.* iii. p. 668, pl. 183. fig. 4 (1845); *Blyth, Cat. Mus. As. Soc.* p. 297 (1849); *Reichenb. Natatores*, pl. xxxvi. figs. 376, 377 (1850); *Hartl. Beitr. Orn. W.-Afr.* p. 44 (1852); *Brehm, Vogelf.* p. 362 (1855); *Sundev. Sv. Fögl.* pl. 81. fig. 1 (1856); *Heugl. Vög. N.O.-Afr.* p. 71 (1856); *Hartl. Syst. Orn. W.-Afr.* p. 259 (1857) [Senegambia, Mozambique]; *Linderm. Vög. Griechenl.* p. 168 (1860); *Powys, Ibis*, 1860, p. 355; *Schleg. Mus. Pays-Bas*, vi. *Pelecani*, p. 30 (1863); *Jerd. B. Ind.* iii. p. 854 (1863); *Fitz. Atl. Nat. Vög.* fig. 334 (1864); *Tristram, P. Z. S.* 1864, p. 455 [Palestine]; *Adams, Ibis*, 1864, p. 35; *Wright, Ibis*, 1864, p. 154 [Malta]; *Sperling, Ibis*, 1864, p. 289 [Missolonghi]; *Kirk, Ibis*, 1864, p. 338 [Zambesi, breeding], 1865, p. 466; *Filippi, Viagg. Pers.* i. p. 352 (1865) [Astrakan]; *Bree, B. Eur.* iv. p. 174, pl. (1867); *Layard, B. S. Afr.* p. 381 (1867); *Degl. & Gerbe, Orn. Europ.* ii. p. 342 (1867); *Taylor, Ibis*, 1867, p. 71; *Chapman, Trav. S. Afr., App.* p. 424 (1868); *Slater, P. Z. S.* 1868, pp. 264, 265, figs. 1 & 2; *Gurney, Ibis*, 1868, p. 264, & 1869, p. 463 [Pas de Calais]; *Elliot, P. Z. S.* 1869, p. 579; *Taylor, Ibis*, 1869, p. 54; *Finsch & Hartl. Vög. Ost-Afr.* p. 848 (1870); *Elwes & Buckley, Ibis*, 1870, p. 335 [Sea of Marmora]; *Fritsch, Nat. Vög. Europa's*, p. 447 (1870); *Atl.* pl. 46. figs. 6 & 8 (1871); *Shelley, Ibis*, 1871, p. 317; *Slater, P. Z. S.* 1871, p. 632; *Finsch, Beitr. Orn. N.O.-Afr.* iv. p. ccix (1871); *G. R. Gray, Hand-l. B.* iii. p. 129 (1871); *Shelley, B. Egypt*, p. 293 (1872); *Bemmelen, Zool. Gart.* 1872, p. 264 [breeding]; *Brooke, Ibis*, 1873, p. 345 [Sardinia]; *Heugl. Orn. N.O.-Afr.* iv. p. 1496 (1873); *Hume, Str. F.* i. p. 288 (1873) [Upper Sind]; *Severtz. J. f. O.* 1873, pp. 344, 389; *id. Turkest. Jevotnie*, p. 70 (1873); *Marchand, Rev. Mag. Zool.* (3) iii. p. 143, pl. 3 (1875); *Severtz. J. f. O.* 1875, p. 185; *Danf. & Brown, Ibis*, 1875, p. 430 [Transylvania]; *Dresser, Ibis*, 1876, p. 414; *Blanf. E. Pers.* ii. p. 299 (1876) [Caspian]; *Sintenis, J. f. O.* 1877, p. 68 [Dobrudscha]; *Dresser, B. Eur.* vi. p. 193, pl. 393 (1879); *Schmidt, P. Z. S.* 1880, p. 318; *Gigl. Ibis*, 1881, p. 216; *Seebohm, Ibis*, 1882, p. 231 [Astrakan], 1883, p. 36 [Caucasus]; *Dubois, Bull. Mus. Belg.* ii. p. 7 (1883); *Rudde, Orn. Caucas.* p. 472 (1884); *Alléon, Orn.* 1886, p. 425 [Dobrudscha]; *Gigl. Arif. Ital.* p. 269 (1886); *Salvad. Ucc. Ital.* p. 272 (1887); *Hume, Str. F.* x. p. 488 (1887); *Tschudi & Dalla Torre, Orn.* 1887, p. 349, 1888, p. 360, 1890, p. 266 [Austro-Hungary]; *Koenig, J. f. O.* 1888, p. 297 [Algeria]; *Tacz. Orn.* 1888, p. 505 [Poland]; *Lilford, Ibis*, 1889, p. 347 [Cyprus]; *Rudde & Walt. Orn.* 1889, pp. 124, 237 [Transcaspia]; *Kaiser, Orn.* 1890, p. 541 [Egypt]; *Hartert, Ibis*, 1892, p. 519 [E. Prussia]; *Barnes, Ibis*, 1893, p. 179 [Aden]; *Reiser, Orn. Balcanica*, ii. p. 190 (1894); *Chapman, Ibis*, 1894, p. 348 [W. Jutland]; *Blasius, Orn.* viii. pt. iv. p. 685 (1896).
- White Pelican, *Lath. Gen. Hist.* x. p. 397 (1824).
- Onocrotalus brissonii*, *Children, in Denham & Clapperton, Trav. in Afr., App.* p. 205 (1826) [Lake Tchad].
- Onocrotalus phoenix*, *Less. Man. Orn.* ii. p. 371 (1828).
- Pelecanus longirostris*, *Hume, Str. F.* v. p. 491 (1877) [Dacca]

There can be little doubt that the true *P. onocrotalus* of Southern Europe and Africa is specifically distinct from the smaller Indo-Chinese form, *P. roseus*, though the two forms grade one into another in the countries between Fao, at the head of the Persian Gulf, and Sind.

*P. onocrotalus* may be distinguished by its much larger size, longer bill, swollen forehead, rising abruptly above the base of the culmen, and by the number of tail-feathers, which appears to be invariably 24.

Owing to the scarcity of European examples in museums, I have been able to examine only a limited number of skins of typical *P. onocrotalus*, but these all agree one with another in possessing 24 tail-feathers. Several living examples in the Zoological Society's Gardens have also been examined, and all possess 24 tail-feathers.

*P. roseus* is characterized by its smaller size, shorter bill, especially in the females, the absence of any frontal swelling, and by having the tail invariably composed of 22 feathers. Upwards of 100 Indian and Burmese specimens show no variation in the number of tail-feathers.

A careful examination of specimens from Sind and Fao, at the head of the Persian Gulf, shows that some specimens possess 22 tail-feathers, while others have 24, and that in other respects most of the birds from these countries are intermediate forms. The two species evidently intergrade, and no doubt interbreed.

Typical *P. roseus* is said to wander as far west as South-eastern Europe and North-east Africa, and it probably also occurs in South Africa, for there is an adult female Pelican which has for many years been living in the Zoological Society's Gardens, and which appears to be a hybrid between *P. onocrotalus* and *P. roseus*. This bird, procured in the Orange Free State, has the swollen forehead of the former species, but the short bill, about 12 inches in length, and 22 tail-feathers characteristic of the latter.

It must, however, be remembered that hybrid birds are often wanderers, and it may be that the smaller birds reported from South-east Europe and North-east Africa are intermediate forms bred in the countries where the ranges of the species overlap.

*Adult in breeding-plumage* The whole plumage white tinged with beautiful rosy pink; primaries black with white shafts; primary-coverts black; secondaries varying from blackish in those next the primaries to ash-colour in those next the body; breast-patch ochreous yellow.

*The male has little or no crest*; the longest feathers on the occiput and nape, measuring scarcely two inches, are not much longer than those forming the mane.

*Male.* Iris deep hazel-red; orbital region pale purplish white with a yellow tinge; base of upper and lower mandible dull leaden slate-colour; the midrib paler at the base, darkest in the middle, and shading off into greyish pink near the nail; sides of the upper mandible between the midrib and the edges of a pale gumbooge-yellow, with streaks of light red radiating from the edge, which is uniform

bright light red, shading off into pale yellow near the light red nail; terminal half of the lower mandible pale greyish yellow, upper edge near the base of a dusky red; pouch gamboge-yellow; tarsus and toes pale pinkish straw-yellow; webs greyish yellow (*S. Doig*).

*The female has a full crest* composed of long, narrow, pointed feathers directed backward, the longest measuring from four to five inches.

Colours of the soft parts very similar to those of the male.

The differences between this species and the following, *P. roseus*, have been stated above.

Typical examples of *P. onocrotalus* measure:—

|                 |                 | Total length. | Culm. | Wing. | Tail.                 | Tarsus. |
|-----------------|-----------------|---------------|-------|-------|-----------------------|---------|
|                 |                 | in.           | in.   | in.   | in.                   | in.     |
| Adult male.     | Antioch .....   | .....         | 17·7  | 28·5  | .....                 | 5·5 *   |
| [Adult female.] | Dobrudscha..... | abt. 72·0     | 16·3  | 27·0  | 7·8                   | 5·1     |
| Adult female.   | Astrakan .....  | abt. 70·0     | 18·0  | 28·5  | 8·2                   | 5·6     |
| [Adult female.] | [Senegal].....  | .....         | 17·7  | 29·5  | .....                 | ..... * |
| [Adult male.]   | Lake Shirwa ... | abt. 66·0     | 17·3  | 27·0  | 7·0 (im-<br>perfect). | 5·2     |
| [Adult male.]   | Lake Shirwa ... | abt. 73·0     | 17·0  | 26·0  | 8·7                   | 5·5     |

\* Paris Museum.

Intermediate examples between *P. onocrotalus* and *P. roseus* measure:—

|                           |                       | Total length. | Culm.       | Wing.     | Tail.   | Tarsus.  |
|---------------------------|-----------------------|---------------|-------------|-----------|---------|----------|
| Several adult<br>males.   | Eastern Narra...      | 72·0          | 15·25–17·25 | 28·5      | 8·0     | 5·5–5·75 |
| Several adult<br>females. | Eastern Narra...      | 60·0          | 12·25–13·5  | 24·0–26·3 | 7·0–8·0 | 4·5      |
| Nearly adult<br>male.     | Fao, Persian<br>Gulf. | abt. 50·0     | 13·3        | In moult. | 7·8     | 5·0      |

Typical examples of *P. roseus* measure:—

|                           |            | Total length. | Culm.     | Wing. | Tail. | Tarsus. |
|---------------------------|------------|---------------|-----------|-------|-------|---------|
| Several adult<br>males.   | Pegu ..... | 62·0          | 14·0–15·8 | 28·0  | 8·0   | 5·5     |
| Several adult<br>females. | Pegu ..... | 54·0          | 10·8–12·0 | 25·0  | 7·0   | 4·5     |

*Young bird* (half in down). General colour dull rufous-brown; the head, neck, breast, and underparts in down; the mane partially represented by erect downy feathers; wing-coverts, back, and scapulars pale rufous-brown, the latter mixed with grey; primary-quills black; secondaries ash-brown, becoming ash-grey on the innermost secondaries. Culmen 6·9 inches.

*Young in first plumage.* Crest not more than half an inch long, composed of soft loose feathers; a line of similar feathers down the hind-neck; head and neck white, tinged with rust-colour; the whole lower plumage rust-colour; upper plumage dingy white, the middles of the feathers darker; tail dark brown; winglet blackish; primaries black with white shafts; outer secondaries ash-brown, scapulars and inner secondaries dark brown; lesser and median wing-coverts brown; greater coverts ash-brown; under wing-coverts brown, edged with whitish brown; no indication of a breast-patch. Culmen 12 inches.

The change to mature plumage consists of the feathers turning white, and in the assumption of a breast-patch in both sexes, and a lengthened crest in the female. The full plumage is probably not attained until the third or fourth year.

*Hab.* Southern Europe and Africa, ranging eastward into Northern India.

|                          |                                               |                             |
|--------------------------|-----------------------------------------------|-----------------------------|
| a. Juv. sk.              | Dalmatia.                                     | H. E. Dresser, Esq.<br>[P.] |
| b. ♀ ad. sk.             | Moldavia.                                     | Purchased.                  |
| c. ♀ ad. sk.             | Dobrudacha, May 22.                           | Old Coll.                   |
| d, e. Imm. sk.           | Egypt.                                        | Sir Savile Crossley<br>[P.] |
| f, g. Ad. et imm.<br>sk. | [Abyssinia.]                                  | Dr. Rüppell [C.]            |
| h. ♂ ad. sk.             | Lake Shirwa, British Central<br>Africa, Sept. | Sir H. H. Johnston<br>[P.]  |
| i. ♂ ad. sk.             | Lake Shirwa.                                  | Alfred Sharpe, Esq.<br>[P.] |
| k. ♂ imm. sk.            | Dacca, N.E. India.                            | Hume Coll.                  |

(Type of *P. longirostris*, Hume.)

The following specimens are more or less intermediate between *P. onocrotalus* and *P. roseus* :—

|                             |                                                 |                             |
|-----------------------------|-------------------------------------------------|-----------------------------|
| a-g. ♂ ad. et<br>imm. sk.   | Fao, Persian Gulf, Feb., Oct.,<br>& Dec.        | W. D. Cumming,<br>Esq. [P.] |
| h-g. ♂ ♀ ad. et<br>imm. sk. | Eastern Narra, Sind ( <i>Scrope<br/>Doig</i> ). | Hume Coll.                  |
| p-r. ♂ ♀ ad. et<br>imm. sk. | Mado Mehur, Upper Sind,<br>Jan. (A. O. H.).     | Hume Coll.                  |

## 2. *Pelecanus roseus*.

Le Pélican rose de l'Isle de Luçon, Sonnerat, *Voy. N. Guin.* p. 91, pl. liv. (1776) [adult].

Le Pélican brun de l'Isle de Luçon, Sonnerat, *Voy. N. Guin.* p. 91, pl. liii. (1776) [juv.].

Rose-coloured Pelican, *Lath. Gen. Syn.* vi. p. 579 (1785); *id. Gen. Hist.* x. p. 401 (1824).

Manilla Pelican, *Lath. Gen. Syn.* vi. p. 483 (1785); *id. Gen. Hist.* x. p. 401 (1824).

*Pelecanus roseus*, *Gmel. S. N.* i. pt. ii. p. 570 (1788); *Latham, Ind. Orn.* ii. p. 883 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 43, pl. 13. fig. 3 (1790); ? *Salvad. Ucc. Borneo*, p. 363 (1874); *Walden, Tr. Z. S.* ix. p. 245 (1875); *Oates, B. Brit. Burmah*, ii. p. 239 (1883).

*Pelecanus manillensis*, *Gmel. S. N.* i. pt. ii. p. 571 (1788); *Lath. Ind. Orn.* ii. p. 883 (1790).

*Pelecanus javanicus*, *Horsfield, Trans. Linn. Soc.* xiii. p. 197 (1822); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 116 (1825); *Blyth, Cat. Mus. As. Soc.* p. 297 (1849); *Adams, P. Z. S.* 1858, p. 509 [Punjab]; *Irby, Ibis*, 1861, p. 247 [Oudh & Kumaon]; *Jerd. B. Ind.* iii. p. 857 (1863); *Blyth, Ibis*, 1867, p. 179; *Sclater, P. Z. S.* 1868, p. 268; *Elliot, P. Z. S.* 1869, p. 581; *Hume, Str. F.* i. p. 128

- (1873) [Sind]; ? *Salvad. Ucc. Borneo*, p. 363 (1874); *Blyth & Wald. B. Burma*, p. 164 (1875); *Ball, Str. F.* iii. p. 294 (1875) [Chota Nagpur]; *Hume & Davison, Str. F.* vi. p. 494 (1878) [Tenasserim]; *Cripps, Str. F.* vii. p. 314 (1878) [Faridpur]; *Butler, Cat. B. Sind*, p. 81 (1879); *Hume, Str. F.* ix. p. 119 (1880); *Reid, Str. F.* x. p. 87 (1881) [Lucknow]; *Murray, Zool. Sind*, p. 330 (1884); *Hume, Str. F.* x. p. 489 (1887), xi. p. 351 (1888) [Manipur].
- Javan Pelican, *Lath. Gen. Hist.* x. p. 403 (1824).
- Pelecanus minor*, *Rüpp. Mus. Senck.* ii. p. 185 (1837); *Keys. u. Blas. Wirbelt.* p. 89 (1840); *Rüpp. Vög. N.O.-Afr.* p. 132, pl. 49 (1845) [Lower Egypt]; *G. R. Gray, Gen. B.* iii. p. 668 (1845); *Brehm, Vogelf.* p. 362 (1855); *Heugl. Vög. N.O.-Afr.* p. 72 (1856); *Blyth, Ibis*, 1867, p. 180; *Elliot, P. Z. S.* 1869, p. 580; *Fritsch, Nat. Vög. Europa's*, p. 447 (1870), *Atl.* pl. 46. fig. 1 (1871); *Gurney's ed. Anderss. B. Damaral.* p. 371 (1872); *Shelley, B. Egypt*, p. 294 (1872); *Oates, Str. F.* x. p. 247 (1882) [S. Pegu]; *Radde, Orn. Caucas.* p. 473 (1884); *Hume, Str. F.* x. p. 489 (1887); *Salvad. Ucc. Ital.* p. 272 (1887); *Reiser, Orn. Balcanica*, ii. p. 191 (1894).
- Pelecanus mitratus*, *Licht. Abh. Akad. Berl.* 1833, p. 436, pl. iii. fig. 2; *G. R. Gray, List of B.* pt. iii. p. 189 (1844); *id. Gen. B.* iii. p. 668 (1845); *Bonap. Consp. Av.* ii. p. 162 (1855); *Jerd. B. Ind.* iii. p. 856 (1863); *Blyth, Ibis*, 1867, p. 178; *Sclater, P. Z. S.* 1868, p. 266, fig. 3; *id. P. Z. S.* 1871, p. 632; *G. R. Gray, Hand-l. B.* iii. p. 130 (1871); *Heugl. Orn. N.O.-Afr.* iv. p. 1500 (1873); *David & Oustal. Ois. Chine*, p. 531 (1877); *Bocage, Orn. Angola*, p. 524 (1881); *Holub u. Pelz. Beitr. Orn. S.-Afr.* p. 343 (1882); *Sharpe's ed. Layard's B. S. Afr.* p. 776 (1884); *id. Ibis*, 1891, p. 116 [Fao]; *Fleck, J. f. O.* 1894, p. 380 [S.W. Africa].
- Pelecanus calirhynchus*, *Hodgs. in Gray's Zool. Misc.* p. 86 (1844); *id. Icon. ined.* pl. 149. no. 92.
- Pelecanus onocrotalus*, *G. R. Gray, List of B.* pt. iii. p. 189 (1844) [part, India]; *Swinhoe, P. Z. S.* 1863, p. 325 [Japan?], ? 1865, p. 352 [Amoy]; *Blyth, Ibis*, 1867, p. 179; *Swinhoe, P. Z. S.* 1871, p. 420 [Foochow]; *Adam, Str. F.* i. p. 403 (1873) [Sambhur]; *Butler, Str. F.* iv. p. 32 (1876) [N. Guzerat], v. p. 235 (1877) [Deesa]; *Hume, Str. F.* vii. p. 98 (1878) [Oodeypur]; *Ball, Str. F.* vii. p. 233 [Midnapur: Lohardugga]; *Goeldlin, J. f. O.* 1879, p. 382; *Doig, Str. F.* x. p. 510 (1887) [E. Narra].
- Pelecanus pygmæus*, *Brehm, Vogelf.* p. 362 (1855).
- Pelecanus giganteus*, *Brehm, J. f. O.* 1855, p. 94 [N.E. Africa].
- Pelecanus megalophus*, *Heugl. Vög. N.O.-Afr.* p. 72 (1856).
- Pelecanus onocrotalus*, var. *minor*, *Dubois, Bull. Mus. Belg.* ii. p. 7 (1883).
- Pelecanus rufescens*, v. *Pelzelin, Ibis*, 1886, p. 372 [Lower Danube].

*Adult in breeding-plumage.* Similar to *P. onocrotalus*, but smaller, and distinguished by having a shorter bill, especially in the female, the forehead devoid of any swelling, and the tail composed of 22 feathers.

As in *P. onocrotalus*, the male has a very short crest on the occiput and nape, while in the female there is a full crest of narrow pointed feathers, the longest measuring nearly five inches.

As may be seen from the measurements given above (p. 465), the



bill of the *adult female* is not nearly so long as that of the *male*, while in *P. onocrotalus* both sexes have the bill equally developed.

The colours of the soft parts appear to be similar to those of *P. onocrotalus*. The younger stages of plumage are also like those of the latter species.

*Hab.* Indo-Chinese countries, ranging eastward to Java, Borneo, the Philippine Islands, and possibly Japan, and westward to South-eastern Europe and Africa.

|                               |                                                                      |                                                                            |
|-------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------------|
| a-c. ♂ ♀ ad. et<br>imm. sk.   | Sultanpur, Gurgaon Dist.,<br>N.W. India, Nov. ( <i>W. N. Hill</i> ). | Hume Coll.                                                                 |
| d. ♀ ad. sk.                  | Sambhur, Nov. ( <i>R. M. Adam</i> ).                                 | Hume Coll.                                                                 |
| e. ♂ imm. sk.                 | Oodeypur, Feb. ( <i>G. King</i> ).                                   | Hume Coll.                                                                 |
| f-m. ♀ ad. et<br>imm. sk.     | Fyzabad, Oudh.                                                       | Hume Coll.                                                                 |
| n, o. ♂ ♀ ad. sk.             | Etawah, Jan. & March.                                                | Hume Coll.                                                                 |
| p-r. ♀ ad. et<br>imm. sk.     | Futtehghur, March ( <i>A. Anderson</i> ).                            | Hume Coll.                                                                 |
| s, t. ♂ imm. et<br>♀ ad. sk.  | Allahabad, Jan. 24 ( <i>A. O. H.</i> ).                              | Hume Coll.                                                                 |
| u. ♀ ad. sk.                  | Faridpur, Feb. 15 ( <i>J. R. Cripps</i> ).                           | Hume Coll.                                                                 |
| v. ♀ ad. sk.                  | Calcutta.                                                            | Hume Coll.                                                                 |
| w, x. ♂ ♀ imm.<br>sk.         | Dacca.                                                               | Hume Coll.                                                                 |
| y. Vix ad. sk.                | Madras.                                                              | Dr. T. C. Jerdon<br>[P.].                                                  |
| z-g'. ♂ ♀ ad. et<br>imm. sk.  | Pegu, Aug., Sept., Oct.<br>( <i>E. W. O.</i> ).                      | Oates Coll.                                                                |
| r' d'. ♂ ♀ ad. et<br>imm. sk. | Thaung, Sept., Nov.                                                  | Hume Coll.                                                                 |
| e''. Imm. sk.                 | Klang, Malay Peninsula, July<br>( <i>W. Davison</i> ).               | Hume Coll.                                                                 |
| f''. Imm. sk.                 | Penang ( <i>Dr. Cantor</i> )                                         | India Museum [P.].                                                         |
| g''. Ad. sk.                  | Malacca ( <i>Dr. Cantor</i> )                                        | India Museum [P.].                                                         |
| h''. Imm. sk.                 | Cochin China.                                                        | M. L. Pierre [P.].                                                         |
| i'' Ad. sk.                   | Foochow, China, Dec. ( <i>R. Swinhoe</i> ).                          | Seebold Coll.                                                              |
| k'. Ad. sk.                   | Java ( <i>Horsfield</i> ).                                           | India Museum [P.].                                                         |
| l' Skeleton.                  | India.                                                               | (Type of <i>P. javanicus</i> , Horsf.)<br>Director of Kew<br>Gardens [P.]. |
| m'' Skeleton.                 | Egypt                                                                | Zool. Soc. Coll.                                                           |

### 3. *Pelecanus crispus*.

Dalmatian Pelican, *Auct.*

Le Pélican de Smyrne, *Bonn. Publ. Encycl. Meth.* i. p. 43 (1790).

*Pelecanus onocrotalus*, *Pall. (sec Linn.) Zoogr. Rosso-As.* ii. p. 292 (1811) [part].

*Pelecanus crispus*, *Bruch, Isis*, 1832, p. 1109; *Werner, Atl. Ois. d'Eur., Ord.* 15, pl. 86 (1828); *Brandt, Anim. Rossic. Nov., Aves*, fasc. i. p. 50, pl. vi. (1836); *Gould, B. Eur.* v. pl. 406 (1837); *Licht. Abh. Akad. Berl.* 1838, p. 437, pl. in. fig. 4, *Schinz, Europ. Fauna*, i. p. 365 (1840); *Temm. Man. d'Orn.* iv. p. 562 (1840); *Keys. u. Blas. Wirbelth.* p. 89 (1840); *Demid. Voy. Russ. Mérid.*

iii. p. 297 (1840); *Naumann, Vög. Deutschl.* xi. p. 180, pl. 283 (1842); *G. R. Gray, Gen. B.* iii. p. 668 (1845); *Brehm, Vogelf.* p. 361 (1855); *Bonap. Consp. Av.* ii. p. 161 (1855); *Heugl. Vög. N.O.-Afr.* p. 71 (1856) [Egypt; Nubia]; *Tristram, Ibis*, 1859, p. 37 [S. Palestine]; *Simpson, Ibis*, 1860, pp. 202, 395 [Ætolia]; *Linderm. Vög. Griechenl.* p. 168 (1860); *Powys, Ibis*, 1860, p. 355 [Epirus]; *Schleg. Mus. Pays-Bas*, vi. *Pelecani*, p. 32 (1863); *Tristram, P. Z. S.* 1864, p. 455; *Filippi, Viagg. Pers.* i. p. 352 (1865) [Lake Goktscha]; *Bree, B. Eur.* iv. p. 167, pl. (1867); *Degl. & Gerbe, Orn. Europ.* ii. p. 344 (1867); *Sclater, P. Z. S.* 1868, p. 267; *Hume, Ibis*, 1868, p. 235 [Etawah]; *Tristram, Ibis*, 1868, p. 331; *Elliot, P. Z. S.* 1869, p. 582; *Elwes & Buckl. Ibis*, 1870, p. 335 [Macedonia]; *Fritsch, Nat. Vög. Europa's*, p. 448 (1870), *Atl.* pl. 46 figs. 5 & 7 (1871); *Finsch, Beitr. Orn. N.O.-Afr.* iv. p. ccix (1871); *G. R. Gray, Hand-l. B.* iii. p. 130 (1871); *Shelley, Ibis*, 1871, p. 317 [Egypt]; *Saunders, Ibis*, 1871, p. 398 [Valencia and Balearic Is.]; *Shelley, B. Egypt*, p. 293 (1872); *Hume, Ibis*, 1872, p. 468 [Sind]; *id. Str. F.* i. pp. 45, 109, 110, 112, 121, 142, 288 (1873) [Sind; Mekran coast]; *Heugl. Orn. N.O.-Afr.* iv. p. 1507 (1873); *Swinhoe, Ibis*, 1874, p. 182 [Shanghai]; *Irby, Orn. Gibraltar*, p. 226 (1875) [Valencia and Balearic Is.]; *Danf. & Brown, Ibis*, 1875, p. 430 [Transylvania]; *Blanf. E. Pers.* ii. p. 299 (1876) [Balúchistán and Caspian Sea]; *Sintenis, J. f. O.* 1877, p. 68 [Dobrudscha]; *Prjeval. in Rowley's Orn. Misc.* iii. p. 146 (1878) [Dalai-nor and Hoang-ho Valley]; *Hume, Str. F.* vii. p. 98 [Oodeypur], p. 448 (1878); *Dresser, B. Eur.* vi. p. 199, pl. 394 (1879); *Butler, Cat. B. Sind*, p. 81 (1879); *Schmidt, P. Z. S.* 1880, p. 318; *Gigl. Ibis*, 1881, p. 216; *Reid, Str. F.* x. p. 87 (1881) [Fyzabad, Oudh]; *Seebohm, Ibis*, 1882, p. 231 [Astrakan], 1883, p. 36 [Caucasus]; *Dubois, Bull. Mus. Belg.* ii. p. 8 (1883); *Murray, Zool. Sind.* p. 328 (1884); *Radde, Orn. Caucas.* p. 470 (1884); *Gigl. Avif. Ital.* pp. 268, 461 (1886); *Alléon, Orn.* 1886, p. 426 [Dobrudscha]; *Salvad. Ucc. Ital.* p. 272 (1887); *Doig, Str. F.* x. p. 508 (1887) [E. Narra, Sind]; *Koenig, J. f. O.* 1888, p. 297 [Algeria]; *Lilford, Ibis*, 1889, p. 347 [Cyprus]; *Radde & Walt. Orn.* 1889, pp. 124, 174 [Transcaspia]; *Tschusi & Dalla Torre, Orn.* 1890, p. 266 [Austro-Hungary]; *Gigl. Ibis*, 1894, p. 453 [Italy]; *Reiser, Orn. Balcanica*, ii. p. 192 (1894), iv. p. 140 (1896).

*Pelecanus patagiatus*, *Brehm, Vogelf.* p. 361 (1855).

*Pelecanus orientalis*, *Wright, Ibis*, 1869, p. 255.

*Pelecanus* sp., *Rickett & La Touche, Ibis*, 1896, p. 493 [Foochow].

*Adult in breeding-plumage.* General colour of the plumage silvery white; primary-quills black, with black shafts; primary-coverts black; secondary-quills mostly ashy, white along the inner web and towards the base; median and greater wing-coverts, back, and scapulars with black shafts; top of the head covered with long loose plumage, forming a broad, thick, and slightly curly crest overhanging the occiput, the longest feathers being more than 4 inches in length; the feathers of the back of the neck lengthened and forming a mane; a patch of golden-yellow or reddish-golden feathers on the upper breast. Tail composed of 22 feathers.

*Adult male.* Total length about 64 inches, culmen 16.5, wing 28, tail 9, tarsus 4.8.

*Adult female.* Total length about 63 inches, culmen 14·5, wing 27, tail 8·7, tarsus 4·5.

Iris varies from pale straw-yellow to white; bill greyish pink, edges of mandibles for the terminal two-thirds yellowish red: nail orange: orbital region livid purple: pouch deep yellow, varying to deep orange-vermilion in the most adult; legs and feet dull pinkish grey.

When once fully adult the plumage in this species is not subject to seasonal change, but in non-breeding birds the yellow patch on the chest disappears.

*Young in down.* Lesser and median wing-coverts pale sandy brown; greater wing-coverts ashy, primary- and secondary-quills, primary-coverts, and winglet blackish; scapulars and tail-feathers ashy, tipped with brownish white: forehead, top and sides of head covered with dark smoke-coloured down; rest of the body covered with pure white down. Culmen 5·5 inches.

*Obs.* It is not known how many years the young of *P. crispus* takes to attain the fully mature plumage, but probably at least three. The scapulars, secondaries, and tail-feathers, when freshly moulted, are of a fine mealy or silvery grey, but the grey soon wears off, and the feathers become of a dark brown colour, which gradually fades to a pale brown or sandy brown. Thus a very marked change in colour takes place without a moult.

*Young in first plumage.* Back and scapulars mealy grey; wing-coverts and secondaries much worn and of a pale sandy-brown; lower back and rump pure white, the latter with dark shaft-stripes; tail-feathers white, brown on the outer web: when freshly moulted they are of a silvery grey, edged with white; rest of the plumage white; the crest and mane only slightly developed.

*More mature specimens* (probably in the second year's plumage) resemble the above, but the feathers of the back and scapulars are white, with grey or brownish-grey middles and dark shaft-stripes, and the plumage is altogether whiter.

*Hab.* South Europe and North Africa, ranging eastward through Northern India to China and South-east Mongolia.

|                                  |                                                  |                             |
|----------------------------------|--------------------------------------------------|-----------------------------|
| <i>a</i> Ad. sk.                 | South Europe.                                    | Old Coll.                   |
| <i>b, c.</i> Pull. sk.           | Fao, Persian Gulf.                               | W. D. Cumming,<br>Esq. [P]. |
| <i>d-g</i> ♂ ad. et imm. sk.     | Mekran coast, Feb. ( <i>A. O. H.</i> ).          | Hume Coll.                  |
| <i>h.</i> Imm. sk.               | Sind.                                            | Hume Coll.                  |
| <i>i-m.</i> ♀ imm. sk.           | Eastern Narra, Jan. ( <i>S. Day</i> ).           | Hume Coll.                  |
| <i>n</i> ♂ imm. sk.              | Madho Mehur, Jan. ( <i>A. O. H.</i> ).           | Hume Coll.                  |
| <i>o, p.</i> ♂ ad. sk.           | River Indus, Dec. ( <i>A. O. H.</i> ).           | Hume Coll.                  |
| <i>q.</i> ♀ ad. sk.              | Sultanpur, Gurgaon Dist. ( <i>W. N. Chill</i> ). | Hume Coll.                  |
| <i>r.</i> ♂ ad. sk.              | Delhi, Dec. 13 ( <i>C. T. Bingham</i> ).         | Hume Coll.                  |
| <i>s-u.</i> Ad. et imm. sk.      | Fyzabad, Oudh.                                   | Hume Coll.                  |
| <i>v, w.</i> ♀ ad. et ♂ imm. sk. | Mynpoorie Dist., Feb. 24.                        | Hume Coll.                  |

|                       |                      |                                 |
|-----------------------|----------------------|---------------------------------|
| <i>x.</i> ♀ ad. sk.   | Etawah, Nov. 7.      | Hume Coll.                      |
| <i>y.</i> Imm. sk.    | Foochow, China, Dec. | C. B. Rickett, Esq.<br>[P.]     |
| <i>z.</i> Ad. sk.     | Shanghai.            | Dr. R. Bowdler<br>Sharpe [P.]   |
| <i>a'.</i> Ad. sk.    | Shanghai.            | Shanghai Museum<br>[P.]         |
| <i>b'.</i> ♂ imm. sk. | Ningpo, Jan. 18.     | Shanghai Museum<br>[P.]         |
| <i>o'.</i> Skeleton.  |                      | Director of Kew<br>Gardens [P.] |

4. *Pelecanus philippensis*.

*Le Pélican des Philippines*, *Brisson, Orn.* vi. p. 527, pl. xlvi. (1760); *D'Aubent. Pl. Enl.* ix. pl. 65 [no. 965]; *Bonn. Tabl. Encycl. Méth.* i. p. 43 (1790).

Philippine Pelican, *Latham, Gen. Syn.* vi. p. 583 (1785); *id. Gen. Hist.* x. p. 402 (1824).

*Pelecanus philippensis*, *Gmel. S. N.* i. pt. ii. p. 571 (1788); *Latham, Ind. Orn.* ii. p. 883 (1790); *Horsfield, Trans. Linn. Soc.* xiii. p. 197 (1822) [Java]; *G. R. Gray, Gen. B.* iii. p. 668 (1845); *Bonap. Consp. Av.* ii. p. 162 (1855); *Blyth, Cat. Mus. As. Soc.* p. 297 (1849); *Schleg. Mus. Pays-Bas*, vi. *Pelecani*, p. 33 (1863) [part.]; *Jerd. B. Ind.* iii. p. 858 (1863); *Swinhoe, P. Z. S.* 1863, p. 325 [China]; *Schomb. Ibis*, 1864, p. 265 [Siam]; *Swinhoe, Ibis*, 1865, p. 111 [Amoy], 1866, p. 297 [Swatow]; *Blyth, Ibis*, 1867, p. 180; *Slater, P. Z. S.* 1868, p. 268; *Swinhoe, P. Z. S.* 1871, p. 420 [Amoy]; *Slater, P. Z. S.* 1871, p. 633, figs. 2, 3; *Holdsw. P. Z. S.* 1872, p. 482 [Ceylon]; *Hume, Str. F.* i. p. 288 (1873) [Sind]; *id. Nests & Eggs Ind. B.* p. 658 (1873); *id. Str. F.* ii. pp. 48, 324 (1874); *Walden, Tr. Z. S.* ix. p. 246 (1875); *Legge, Ibis*, 1875, p. 409 [Ceylon]; *Hume, Str. F.* iv. p. 224 (1876) [Kyaikto, Tenasserim]; *Butler, Str. F.* iv. p. 33 (1876) [N. Guzerat]; *David & Oustal. Ois. Chine*, p. 531 (1877) [nec synonymy]; *Oates, Str. F.* v. p. 169 (1877) [Pegu: breeding]; *Butler, Str. F.* v. p. 235 (1877) [Deesa]; *Hume & Davison, Str. F.* vi. p. 495 (1878); *Oates, Str. F.* vii. p. 41 (1878); *Davidson & Wenden, Str. F.* vii. p. 93 (1878) [Deccan]; *Cripps, Str. F.* vii. p. 315 (1878) [Faridpur]; *Hume, Str. F.* viii. p. 72 (1879) [Malay Peninsula]; *Butler, Cat. B. Sind*, p. 81 (1879); *id. Cat. B. S. Bombay*, p. 93 (1880); *id. Str. F.* ix. p. 442 (1880) [Belgaum]; *Reid, Str. F.* x. p. 87 (1881) [Lucknow]; *Oates, Str. F.* x. p. 247 (1882) [Pegu]; *Dubois, Bull. Mus. Belg.* ii. p. 9 (1883); *Hume, Str. F.* xi. p. 351 (1888) [Manipur]; *Styan, Ibis*, 1891, pp. 327, 491 [Lower Yangtse]; *La Touche, Ibis*, 1892, p. 486 [Foochow and Swatow].

*Pelecanus gangeticus*, *Hodgs. in Gray's Zool. Misc.* p. 86 (1844); *id. Icon. ined.* pl. 149. no. 582.

*Pelecanus brevirostris*, *Hodgs., fide Bonap. Consp. Av.* ii. p. 162 (1855).

*Pelecanus philippinus*, *Gould, P. Z. S.* 1859, p. 150 [Tavoy].

*Pelecanus crispus*, *Swinhoe (nec Bruch), Ibis*, 1860, p. 68 [Amoy], 1862, p. 254 [Foochow].

*Pelecanus philippinensis*, *Blyth & Wald. Cat. Mamm. & B. Burma*, p. 164 (1875); *Anderson, B. W. Yunnan*, p. 695 (1878); *Legge, B. Ceylon*, iii. p. 1198 (1880).

*Pelecanus manillensis*, *Oates* (nec *Gmel.*), *B. Brit. Burmah*, ii. p. 236 (1883); *Oates*, ed. *Hume's Nests & Eggs Ind. B.* iii. p. 276 (1890); *Slyan, Ibis*, 1893, p. 434 [Hainan], 1894, p. 336 [Lower Yangtse: breeding].

*Pelecanus philipensis*, *Murray, Zool. Sind*, p. 330 (1884).

*Pelecanus rufescens*, *Hume* (nec *Gmel.*), *Str. F.* x. p. 490 (1887) [part, India, etc.].

*Adult in breeding-plumage* (September to February). General colour pure white; forehead, top of the head, fairly long crest, cheeks, and neck covered with dense curly, very soft, pure white feathers, with their black bases more or less visible; the hind-neck, from the crest to the upper back, covered with soft greyish-brown feathers, forming a mane; upper back, scapulars, and wing-coverts white, tinged, especially on the lesser wing-coverts, with cream-colour; winglet, primaries, and primary-coverts brownish black, with the upper surface of the shafts dark; secondaries greyish brown, paler on the outer web and shading into brownish grey on the innermost secondaries; an interscapular line down the middle of the upper back; lower back, rump, flanks, under tail-coverts, axillaries, and under wing-coverts vinaceous; rest of underparts pure white, the chest and upper breast tinged with yellow; tail-feathers ashy, paler towards the tips and with dark shafts. Tail composed of 22 feathers.

Bill pinkish yellow, the lateral portions of the upper mandible with large bluish-black spots; the nail and terminal halves of both mandibles orange-yellow; central portions of the sides of the lower mandible smeared with bluish black; pouch dull purple, blotched and spotted with bluish black; eyelids and skin round the eye orange-yellow, skin in front of eye livid, legs and feet very dark brown; claws yellowish horn; iris stone-white, varying to pale yellow, clouded with brown (*E. W. Oates*).

Total length 51-59 inches, culmen 12.6-14.5, wing 22-24, tail 8-9.5, tarsus 3.3-3.8. The female is somewhat smaller than the male, but not conspicuously so.

*Adult in non-breeding plumage* (March-August). Plumage similar to that of the young after the first moult.

*Nestling*. Covered with white down; iris dark brown; bill pale plumbeous; legs china-white; pouch pale bluish white.

The down on the wings soon turns to pale rufous; and the scapulars, when they appear, are brown, edged with ferruginous; the wing-coverts, on making their appearance, are furnished with a dense fringe of rufous down, which, however, soon falls off, leaving the feathers with rufous margins; the scapulars are developed very rapidly, and their ferruginous margins are diminished in extent as the bird grows; the down on the head and neck gives place to brownish feathers, and the crest and loose feathers of the mane on the hind-neck soon make their appearance.

The young bird, when fully fledged, retains its first feathers for at least one year, the only change being that the brown colours become darker and the rufous edgings abraded and consequently less marked. The impressed spots on the bill are not indicated till

the sixth month, and even at the end of twelve months these spots are quite indistinct, compared with those of the adult bird. Towards the end of the first year a livid spot appears in front of the eyes and soon becomes clearly defined. The nail and the terminal third of the edges of the bill are yellow, legs and toes flesh-colour.

*After the first moult*, at about twelve months of age, the whole head and neck are covered with short, soft downy feathers, the bases of which are black, the tips white; and the crest and mane are developed to the same extent as in the adult; the shoulders and scapulars are wood-brown; the lesser and median coverts to the secondaries wood-brown, the feathers all edged with paler; the greater coverts darker brown, edged with light brown; the coverts to the tertiaries greyish brown, edged with pale fulvous. The whole of the coverts are narrow and sharp-pointed; the winglet, primaries, and their coverts dark brown; the secondaries brown, tinged with ashy on the outer webs; the whole back, rump, upper tail-coverts, and flanks white; the tail dark brown, with the base white; the lower plumage whitish brown, each feather being white with the tip brownish, the feathers close, dense, and soft.

*In June of the third year*, or when the bird is about thirty months old, the moult into adult breeding-plumage is commenced and the change is entirely effected by October, except that in this first breeding-season the wing-coverts never become entirely white as in the old bird, the feathers of these parts being a mixture of long, sharp-pointed, white feathers, and comparatively blunt brown ones. Between June and October the pouch, which has hitherto been spotless, becomes blotched with livid as in the adults, the blotches extending to the face; the legs turn to dark brown: the iris becomes paler brown; and the spots on the bill become firm and well-defined.

Mr. E. W. Oates, having kept large numbers of *P. philippensis* in confinement, has had exceptional opportunities of studying the changes of plumage, and the above descriptions are the results of his observations, published in his 'Birds of British Burmah,' ii. p. 236.

*Hab.* India and Ceylon, ranging southward through Burma to the Malay Peninsula and eastward to China, Hainan, and the Philippine Islands.

|                       |                                                     |                              |
|-----------------------|-----------------------------------------------------|------------------------------|
| a. Imm. sk.           | Belgaum, India, Nov. (E. A. Butler).                | Hume Coll.                   |
| b. Imm. sk.           | Jhansi.                                             | Hume Coll.                   |
| c. ♀ imm. sk.         | Sultanpur, Gurgaon Dist.,<br>Sept. 2 (W. N. Chill). | Hume Coll.                   |
| d, e. Imm. sk.        | Fyzabad, Oudh, Jan.                                 | Hume Coll.                   |
| f-h. Ad. et imm. sk.  | Etawah.                                             | Hume Coll.                   |
| i, k. Ad. sk.         | Mynpoorie Dist., Feb.                               | Hume Coll.                   |
| l, m. Imm. sk.        | Nepal (B. H. Hodgson).                              | India Museum<br>[P.].        |
| n, o. Ad. et imm. sk. | Nepal.                                              | B. H. Hodgson,<br>Esq. [P.]. |
| p, q. Imm. sk.        | Rangoon, April (E. W. Oates).                       | Hume Coll.                   |

|                                         |                                                         |                           |
|-----------------------------------------|---------------------------------------------------------|---------------------------|
| r-l'. ♂ ♀ ad., imm., juv., et pull. sk. | Pegu, Jan., March, and June-Dec.                        | E. W. Oates, Esq. [C.].   |
| u'-w'. ♂ ad. sk.                        | Kyauko, Lower Burma, Feb. (W. Davison).                 | Hume Coll.                |
| x'-a'. ♂ ♀ ad. et imm. sk.              | Thatone, Sept.-Nov. (W. D.).                            | Hume Coll.                |
| b'. ♂ imm. sk.                          | Salween River, above Moulmein, March 6 (C. T. Bingham). | Hume Coll.                |
| c'. ♂ imm. sk.                          | Province Wellesley (Dr. Cantor).                        | India Museum[P.].         |
| d'. Ad. sk.                             | Penang (Dr. Cantor).                                    | India Museum[P.].         |
| e'. Imm. sk.                            | Malacca, July.                                          | Hume Coll.                |
| f'-h'. ♂ ♀ ad. sk.                      | Malacca.                                                | Capt. Pinwill [P.].       |
| i'. Ad. sk.                             | Malacca.                                                | Dr. Cantor [P.].          |
| k'. ♂ ad. sk.                           | Cochin China.                                           | M. Pierre [P.].           |
| l'. Ad. sk.                             | Swatow, China (R. Swinhoe).                             | Seebahn Coll.             |
| m', n'. Ad. et imm. sk.                 | Java (Horsfield).                                       | India Museum[P.].         |
| o'. Skull.                              | Nepal.                                                  | B. H. Hodgson, Esq. [P.]. |
| p', q'. Bodies.                         | Nepal.                                                  | B. H. Hodgson, Esq. [P.]. |

5. *Pelecanus rufescens*.

Red-backed Pelican, *Lath Gen. Syn.* vi. p. 584 (1785) [West Africa]; *id. Gen. Hist.* x. p. 404 (1824).

*Pelecanus rufescens*, *Gmel. S. N.* i. pt. ii. p. 571 (1788); *Latham, Ind. Orn.* ii. p. 884 (1790); *Bonnat, Tabl. Encycl. Méth.* i. p. 44 (1790); *Steph in Shaw's Gen. Zool* xiii pt. i. p. 114 (1825); *Cretzschm in Rupp. Atlas*, ii. p. 31, pl. 21 (1826); *Licht. Abh. Ak. Berl.* 1838, p. 439, pl. in fig. 3; *Drapiez, Dict. Sci. Nat.* viii. p. 385 (1842); *Fraser, P. Z. S.* 1842, p. 144 Niger; *G. R. Gray, List of B.* pt. iii. p. 189 (1844); *id. Gen. B.* iii. p. 608 (1845); *Strickl. P. Z. S.* 1850, p. 221 [Kordofan]; *Hartl. Beitr. Orn. W.-Afr.* p. 44 (1852) [Gambia, Niger, Gold Coast]; *Brehm, J. f. O.* 1855, pp. 92, 93; *Bonap. Conspect. Afr.* ii. p. 162 (1855); *Heugl. Vog. N.O.-Afr.* p. 71 (1856); *Hartl. Syst. Orn. W.-Afr.* p. 259 (1857); *Heugl. Ibis*, 1859, p. 352 [Aden]; *Gurney, Ibis*, 1861, p. 135; *Blyth, Ibis*, 1867, p. 180; *Layard, B. S. Afr.* p. 382 (1867) [Cape Town]; *Sclater, P. Z. S.* 1868, p. 267, pl. xxvi.; *Elliot, P. Z. S.* 1869, p. 583 part, Africa; *Fisch & Hartl. Vog. Ost-Afr.* p. 849 (1870); *Blanf. Zool. Abyss.* p. 442 (1870) Dissi Island; *G. R. Gray, Hand-l. B.* iii. p. 130 (1871); *Sclater, P. Z. S.* 1871, p. 633; *Fisch, Beitr. Orn. N.O.-Afr.* iv. p. ccix (1871); *Antin, e Salvad. Cat. Ucc.* p. 153 (1873) [Massowah]; *Heugl. Orn. N.O.-Afr.* iv. p. 1503 (1873); *id. J. f. O.* 1875, p. 58; *Bocage, J. f. O.* 1876, p. 292 Rio Coroca; *Fisch & Reich. J. f. O.* 1878, p. 247 Tana R.; *Lam.* 1879, p. 295; *Sharpe's ed. Layard's B. S. Afr.* p. 777 (1884); *Bohm, J. f. O.* 1885, p. 62 [Karema, Tanganyika]; *Fisch, J. f. O.* 1885, p. 114; *Hartert, J. f. O.* 1886, p. 612 Niger; *Hume, Str. F.* x. p. 490 [part, Africa, & p. 501 (1887)]; *Sibree, Ibis*, 1892, p. 272 [Madagascar]; *Reichenow, Vog. Deuts.-O.-Afr.* p. 24 (1894).

*Pelecanus cristatus*, *Less. Traité d'Orn.* p. 602 (1831).

*Pelecanus phaeoptus*, *Wagler, Isis*, 1832, p. 1233.

*Pelecanus philippensis*, Schleg. (nec Gmel.), *Mus. Pays-Bas*, vi. *Pelecani*, p. 83 (1863) [part, Africa].

*Pelecanus philippensis* (sic), *Blanf. (neo Gmel.) Zool. Abyss.* p. 442 (1870) [Zulla].

*Pelecanus philippensis*, var. *rufescens*, *Dubois, Bull. Mus. Belg.* ii. p. 9 (1883).

*Pelecanus onocrotalus*, *Yerbury (nec Linn.)*, *Ibis*, 1886, p. 24 [Aden], & 1896, p. 40.

*Adult in breeding-plumage.* Most like *P. philippensis*, which it resembles in having the general colour white, and the interscapular line, lower back, rump, &c. vinaceous. It may, however, be at once distinguished by the following characters: the sides of the culmen are entirely devoid of the large, impressed, bluish-black spots; the feathers covering the top and sides of the head as well as the neck are narrow, straight, and smooth; the feathers of the crest are long and pointed as in the female of *P. onocrotalus*, and more than 4 inches in length in the most adult male, and the colours of the soft parts are entirely different. Tail composed of 20 feathers.

*Adult male.* Total length about 58 inches, culmen 14.5, wing 25, tail 7.8, tarsus 3.5.

Iris yellowish brown, mottled darker; bill yellowish white; nail at tip of upper mandible orange; pouch flesh-colour, with fine transverse, equidistant, and parallel yellow lines; legs yellowish white (*W. T. Blanford*).

*Adult in non-breeding plumage.* Resembles the adult of *P. philippensis* in a similar plumage.

*In the immature stages of plumage* this species closely resembles *P. philippensis* of a similar age.

*Hab.* Africa, south of about 16° N. latitude; Aden.

|                       |                                  |                            |
|-----------------------|----------------------------------|----------------------------|
| a. Ad. sk.            | [Africa.]                        | Purchased.                 |
| b. Imm. sk.           | [Africa.]                        | Old Coll.                  |
| c, d. Ad. et imm. sk. | Gambia.                          | Governor Rendall [C.].     |
| e. Ad. sk.            | River Niger.                     | Dr. Baikie [C.].           |
| f. Imm. sk.           | Zulla, Abyssinia, June 12.       | W. T. Blanford, Esq. [C.]. |
| g. Ad. sk.            | Dissi I., Annesley Bay, Aug. 30. | W. T. Blanford, Esq. [C.]. |
| h. ♂ ad. sk.          | Khartoom, Sept. 20.              | Purchased.                 |
| i. ♂ imm. sk.         | Aden, June 1.                    | Col. J. W. Yerbury [P.].   |
| k. Skeleton.          | [Africa.]                        | Purchased.                 |
| l. Sternum.           | Abyssinia.                       | W. T. Blanford, Esq. [C.]. |

## 6. *Pelecanus fuscus*.

The Pelican of America, *Edwards, Nat. Hist.* ii. p. 93, pl. 93 (1747) [West Indies].

Le Pélican brun, *Brisson, Orn.* vi. p. 524 (1760); *Buffon, Hist. Nat. Ois.* viii. p. 306 (1781).

*Pelecanus onocrotalus* *β. occidentalis*, *Linn. S. N.* i. p. 215 (1766).

Pélican brun d'Amérique, *D'Aubent. Pl. Enl.* ix. p. 187, pl. 64 [no. 957].



- Brown Pelican, *Lath. Gen. Syn.* vi. p. 580 (1785); *id. Gen. Hist.* x. p. 405 (1824); *Nutt. Man. Orn.* p. 476 (1834).
- Charles-Town Pelican, *Pennant, Arct. Zool.* ii. p. 580 (1785); *Lath. Gen. Syn.* vi. p. 585 (1785); *id. Gen. Hist.* x. p. 406 (1824) [Cayenne].
- Dusky Pelican, *Pennant, Arct. Zool.* ii. p. 580 (1785).
- Pelecanus fuscus*, *Gmel. S. N.* i. pt. ii. p. 570 (1788); *Bonnat. Tabl. Encycl. Méth.* i. p. 43, pl. 13, fig. 4 (1790); *Latham, Ind. Orn.* li. p. 883 (1790); *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 320, *Ois.* xvi. p. 226 (1799); *Vieill. Nouv. Dict. d'Hist. Nat.* xxv. p. 140 (1817); *Steph. in Shaw's Gen. Zool.* xii. p. 112 (1835); *Bonap. Isis*, 1832, p. 1191; *Wilson, Am. Orn.* iii. p. 203 (1832); *Aud. Orn. Biogr.* iii. p. 376 (1835), v. p. 212 (1839), pls. celi., cccxxi; *Licht. Abh. Akad. Berl.* 1838, pl. iii. fig. 6; *Audubon, Synopsis*, p. 309 (1839); *d'Orb. in Sagra, Hist. Cuba*, p. 300 (1839); *Drapiez, Dict. Sci. Nat.* viii. p. 385 (1842); *G. R. Gray, List of B.* pt. iii. p. 189 (1844); *Aud. B. Amer.* vii. pp. 32, 191, pls. cccxxiii. & cccxxiv. (1844); *G. R. Gray, Gen. B.* iii. p. 668 (1845); *Gosse, B. Jam.* p. 409 (1847); *Cab. in Schomburgk, Brit. Guiana*, iii. p. 764 (1848); *Cassin, U.S. Expl. Exped.* p. 356 (1858); *Jones, Nat. Bermuda*, p. 51 (1859); *Bryant, Pr. Boat. Soc. N. H.* vii. p. 122 (1859) [Bahamas]; *Sclater & Salvin, Ibis*, 1859, p. 233; *A. & E. Newton, Ibis*, 1859, p. 368 [St. Croix]; *Suckl. Nat. Hist. Wash. Terr.* p. 266 (1859) [part, Texas]; *Baird, B. N. Amer.* p. 870 (1860); *Brewer, Pr. Boat. Soc. N. H.* vii. p. 308 (1860) [Cuba]; *Taylor, Ibis*, 1860, p. 316 (Atlantic only); *id. Ibis*, 1862, p. 129 (Florida); *Schleg. Mus. Pays-Bas*, vi. *Pelecanus*, p. 28 (1863) [part, Mexico]; *Taylor, Ibis*, 1864, pp. 96, 173 [W. Indies]; *Salvin, Ibis*, 1864, pp. 374, 377 [Brit. Honduras]; *Leotaud, Ois. Trinidad*, p. 552 (1866); *Lawrence, Ann. Lyc. N. Y.* vii. pp. 101, 298 (1875) [Samborombi]; *Sclater, P. Z. S.* 1868, p. 268, pl. xxv. and in breeding and non-breeding plumage; *Sinclair, Zool. K. Vet.-Akad. Stockholm*, 1869, p. 603 [Porto Rico]; *Elliot, P. Z. S.* 1869, p. 586 [part]; *Fernitz, J. f. O.* 1870, p. 379 [Costa Rica]; *Martin, Zool. Voy.* 1870, p. 67 [habits]; *G. R. Gray, Handb. B. Am.* p. 330 (1871); *Orourke, Ann. Nat.* v. p. 252 (1871) [Florida]; *Gen. et J. f. O.* 1871, p. 278, & 1875, p. 307 [Cuba]; & 1874, p. 314, & 1878, p. 161 [Porto Rico]; *Coues, Key N. Am. B.* p. 300 (1872) [part]; *Fitzinger, Ibis*, 1873, p. 54; *Sennott, Bull. U.S. G. & Sur.* v. p. 14 (1878) [Texas]; *Grundl. Anal. Soc. Esp. Hist. Nat.* vii. p. 416 (1878); *Lawrence, P. U.S. Nat. Mus.* v. p. 66 [Dominica]; p. 100 [St. Vincent]; p. 236 [Antigua]; p. 240 [Barbuda] (1878); p. 274 [Grenada]; p. 359 [Martinique] (1879); *Cory, B. Bahama Is.* p. 296 (1880), *id. Auk*, v. p. 70 (1880); *Ridgw. Bull. Natl. Orn. C.* v. p. 31 (1880) [Louisiana]; *Massey, B. N. Amer.* p. 467 (1881); *Cory, Bull. Natl. Orn. C.* vi. p. 55 (1881) [Haiti]; *A. & E. Newton, Handb. Jamaica*, p. 112 (1881); *Ridgw. Bull. Natl. Orn. C.* vii. p. 165 (1882) [Louisiana]; *Arch. Bul. Natl. Orn. C.* vii. p. 225 (1882) [S.E. Texas]; *Stearns & Coues, N. Eng. B. & f.* p. 328 (1883); *Dalman, Bul. Mus. Belg.* v. p. 10 (1884) [part]; *Baird, Brewer & Ridgw. Water-B. N. Amer.* i. p. 139, fig. (1884); *Cory, B. Haiti & San Domingo*, p. 172 (1885); *A. O. U. Check-l.* p. 112 (1886); *Salvin, Ibis*, 1886, p. 168; *Ridgw. Man. N. A. B.* p. 82 (1887); *Scott, Auk*, v. p. 371 (1888) [Florida]; *Friess, Ibis*, 1889, p. 501 [Barbadoes]; *Salvin, Ibis*, 1889, p. 276 [Cruzmel]; *Cory, B. W. Ind.* p. 271 (1889); *Scott, Auk*, vii. p. 307 (1890) [Dry Tortugas];

- Florida]; *Cory, Auk*, viii. p. 46 (1891) [Antigua]; *Northrop, Auk*, viii. p. 79 (1891) [Andros Island]; *Brewst. & Chapm. Auk*, viii. p. 137 (1891) [Suwanee R.]; *Gundl. Auk*, viii. p. 190 (1891); *Jamison, Auk*, viii. p. 233 (1891) [Pine Island]; *Laur. Auk*, viii. p. 236 (1891) [Florida : breeding]; *Cory, Auk*, viii. p. 295 (1891) [Berry I.]; *Scott, Auk*, viii. p. 363 (1891) [Jamaica]; *Cory, Cat. W. Ind. B.* p. 85 (1892); *Berlepsch, J. f. O.* 1892, pp. 66, 104 [Curaçao]; *Peters, J. f. O.* 1892, p. 122 [Curaçao]; *Moseley, Notes Voy. Chall.* pp. 10, 13 (1892); *Hartert, Ibis*, 1893, p. 308 [Aruba], p. 326 [Curaçao], p. 336 [Bonaire]; *A. O. U. Check-l.* ed. ii. p. 46 (1895); *Christy, Ibis*, 1897, p. 342 [San Domingo].
- Pelecanus carolinensis*, *Gmel. S. N.* i. pt. ii. p. 571 (1788); *Latham, Ind. Orn.* ii. p. 884 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 52 (1796); *Vieill. Nouv. Dict. d'Hist. Nat.* xxv. p. 140 (1817); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 115 (1825).
- Le Pélican bigarré d'Amérique, *Borkhausen, etc., Teutsche Orn.* pl. 59 (1807).
- Black-bellied Pelican, *Lath. Gen. Hist.* x. p. 403 (1824).
- Leptopelicanus fuscus*, *Reichenb. Natürl. Syst. Vög.* p. vii (1853).
- Onocrotalus fuscus*, *Bonap. Consp. Av.* ii. p. 163 (1855).

*Adult male and female in breeding-plumage* (February–August). Back of the head and feathers bordering the gular pouch white, rest of the head, crest, and upper margins of the pouch clad in sharp, rather stiff plumes of a pale yellowish straw, but these are apparently only found in the most adult examples, and some birds in otherwise complete breeding-plumage have the entire head and borders of the gular pouch white, rest of the neck dark velvety brown, the feathers on the nape forming a short reddish mane. As the plumage becomes worn the general colour of the neck changes to reddish chestnut: plumage of upper parts pale ashy or silvery grey, the feathers of the back, rump, lesser and median wing-coverts and scapulars edged with blackish brown, producing a striped appearance; primaries black, with the basal three-quarters of the shaft white; secondaries and tail-feathers mostly ashy, becoming brownish when worn; a patch of stiff yellow plumes at the base of the fore-neck; rest of the underparts smoky brown, the sides of the breast and flanks with narrow white shaft-stripes. Tail composed of 22 feathers.

♂. Total length about 52 inches, culmen 13·2, wing 22, tail 6, tarsus 3.

♀. Total length about 49 inches, culmen 11·5, wing 20, tail 5·8, tarsus 2·9.

*In breeding-plumage.* Iris yellowish; bill greyish, tinged with brown and spotted irregularly with carmine: tip of upper and terminal half of lower mandible blackish, naked space round the eye blue; pouch dull greenish brown or olive-brown (purple according to Cory); tarsi and feet black.

*Adult male and female in non-breeding plumage* (Sept. to Feb.). Differ from the above in having all the feathered parts of the neck pure white, except the base of the fore-neck.

*Young in the first year.* Head brown; neck pale whitish brown,

rather paler in front; upper back, wing-coverts, and scapulars brown, with paler brownish-grey middles to the feathers; lower back and rump much like those of the adult; upper tail-coverts mostly brown; underparts white, the sides of the breast, belly, and flanks mixed with brownish. The quills resemble those of the adult. As age increases the top of the head and feathers bordering the pouch become mostly white and the underparts largely mixed with greyish-brown feathers, with indistinct whitish shaft-stripes.

*Birds in the first plumage* resemble the above; but the feathers of the back, wing-coverts, and scapulars are brown, edged with pale brownish buff.

*Nearly mature birds* (probably those in the third year) have the upper and under parts like those of the adult, but do not assume the dark velvety-brown neck in the breeding-season, these parts remaining white like those of the adult in winter-plumage; the pale straw-coloured feathers of the head are intermixed with a few dark brown plumes characteristic of the immature plumage.

*Hab.* Coasts and islands of the Gulf of Mexico and Caribbean Sea.

|                           |                                                               |                                 |
|---------------------------|---------------------------------------------------------------|---------------------------------|
| a. Ad. sk.                | North America.                                                | H.R.H. The Duke of Sussex [P.]. |
| b. Ad. sk.                | North America.                                                | Purchased.                      |
| c. Ad. st.                | North America.                                                | J. J. Audubon [C.].             |
| d. ♂ imm. sk.             | Tarpon Springs, Florida, Feb. 3 ( <i>W. E. D. Scott</i> ).    | Salvin-Godman Coll.             |
| e-i. ♂ ♀ ad. sk.          | Tarpon Springs, May 18-17 ( <i>W. F. D. S.</i> ).             | Salvin-Godman Coll.             |
| k. Ad. sk.                | Tarpon Springs, Florida, Aug 8 ( <i>W. E. D. S.</i> ).        | Salvin-Godman Coll.             |
| l, m. ♂ ad sk.            | Corpus Christi, Texas, May 22 ( <i>F. B. Armstrong</i> ).     | Salvin-Godman Coll.             |
| n. Imm. sk.               | Honduras.                                                     | T. Dyson, Esq. [C.].            |
| o, p. ♂ ♀ imm. sk.        | Glover's Reef, Brit Honduras, May 12-14 ( <i>O. Salvin</i> ). | Salvin-Godman Coll.             |
| q, r. Ad. et imm sk.      | Cozumel Island, Yucatan ( <i>G. F. Gannet</i> ).              | Salvin-Godman Coll.             |
| s. Imm. sk.               | Jamaica.                                                      | Purchased.                      |
| t, u. Imm. sk.            | St. Vincent, March 18 ( <i>D. W. Smith</i> ).                 | Salvin-Godman Coll.             |
| v. Imm. sk.               | Union I., St Vincent, Oct. 17 ( <i>D. W. S.</i> ).            | Salvin-Godman Coll.             |
| w-e'. ♂ ♀ ad. et imm. sk. | Grenada, Aug. Sept. ( <i>D. W. S.</i> ).                      | Salvin-Godman Coll.             |
| d'. Imm. sk.              | British Guiana ( <i>Bugle</i> ).                              | Purchased.                      |
| e'. Imm. sk.              | No locality.                                                  | McCormick Bequest.              |
| f'. Sternum.              | Jamaica.                                                      | P. H. Gosse, Esq. [C.].         |

#### Subsp. a. *Pelecanus californicus*.

*Pelecanus fuscus*, Gamb. (*nec Gmel.*) *J. Acad. N. Sci. Philad.* (2) i. p. 227 (1848) [California]; *Newberry, Rep. Expl. Surr.* vi. pt. iv. p. 108 (1857); *Suckl. Nat. Hist. Wash. Terr.* p. 266 (1869) [part,

- California]; *Schleg. Mus. Pays-Bas*, vi. *Pelecani*, p. 28 (1863) [part, California]; *Sclater & Salvin, P. Z. S.* 1864, p. 373 [Panama]; *Coues, Ibis*, 1866, p. 270; *Brown, Ibis*, 1868, p. 426 [Vancouver]; *Sunder. P. Z. S.* 1871, pp. 125, 129 [Galapagos]; *Wyatt, Ibis*, 1871, p. 115 [British Columbia]; *Salvin, Tr. Z. S.* ix. p. 493 (1876); *Belding, P. U.S. Nat. Mus.* v. p. 545 (1883) [Cape St. Lucas, San José]; *Salvin, P. Z. S.* 1883, p. 427 [Charles I., Galapagos].  
*Pelecanus (fuscus?) californicus*, *Ridgw. in Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 143 (1884) [San Francisco to Cape St. Lucas].  
 Brown Pelican, *Cooper, Auk*, iii. p. 125 (1886).  
*Pelecanus californicus*, *Ridgw. Auk*, iii. p. 267 (1886); *Cooper, Auk*, iii. p. 401 (1886); *A. O. U. Check-l.* p. 112 (1886); *Ridgw. Man. N. A. B.* p. 82 (1887); *Blake, Auk*, iv. p. 329 (1887) [Santa Cruz I., Cal.]; *Anthony, P. Cal. Acad. Sci.* (2) ii. pp. 83-85 (1889) [habits]; *Bryant, P. Cal. Acad. Sci.* (2) ii. p. 257 (1889) [Lower California: habits]; *Lawr. Auk*, ix. p. 353 (1892) [Washington Co.]; *A. O. U. Check-l.* ed. ii. p. 46 (1895).

Resembles *P. fuscus* and goes through precisely the same changes of plumage. The measurements of both species are the same.

In the breeding-season the gular pouch is said to be reddish, especially towards the base, instead of greenish; and the bare skin round the eye brown instead of blue. (*L. Belding.*)

The former character appears to vary, for Mr. Alvin Seale writes:—"I question the accuracy of the statement in Ridgway's 'Manual' as regards redness of pouch of *P. californicus* during the pairing-season. My experience would indicate that the colour ranges from yellowish to dusky during the pairing-season." On the other hand, Mr. Anthony informs me that the "*adult birds* have red gular pouches; *i. e.* the basal portion of the pouch is red. The immature bird may show some rosy colour, but, as a rule, it is confined to the adults in *full* plumage, and is, I think, quite constant."

Though *P. californicus* is here admitted as a subspecies of *P. fuscus*, it seems doubtful whether it has any right to rank as such.

With this form I have included the birds from the Galapagos group; the culmen is somewhat larger than in typical Californian birds and measures 14-14.5 inches, but the plumage is similar.

In addition to an immature bird in the British Museum, I have examined several adult examples from Galapagos in the Rothschild Museum.

*Hab.* Pacific coast of N. America from Washington Co. southward to Panama and thence to the Galapagos group.

|                                           |                                                                          |                        |
|-------------------------------------------|--------------------------------------------------------------------------|------------------------|
| <i>a.</i> Imm. sk.                        | San Francisco, California,<br>Dec. ( <i>E. W. Nelson</i> ).              | Salvin-Godman Coll.    |
| <i>b-i.</i> ♂ ♀ ad., imm.,<br>et juv. sk. | Monterey, California, Feb.<br>& Sept.                                    | Alvin Seale, Esq.[C.]. |
| <i>k, l.</i> ♂ ad. sk.                    | San Diego Bay, Cal., Dec.<br>14-15 ( <i>H. W. Henshaw</i> ).             | Salvin-Godman Coll.    |
| <i>m, n.</i> ♀ imm. sk.                   | Mulege, Lower California,<br>March 2-7 ( <i>F. Ferrari-<br/>Perez</i> ). | Salvin-Godman Coll.    |

|             |                                                      |                                         |
|-------------|------------------------------------------------------|-----------------------------------------|
| o. Imm. sk. | Chiapam, Pacific coast of Guatemala, Jan. (O. S.).   | Salvin-Godman Coll.                     |
| p. Ad. sk.  | Panama                                               | Capt. Kellett & Lieut. Wood, R.N. [P.]. |
| q. Imm. sk. | Charles I., Galapagos, Feb. (Admiral A. H. Markham). | Salvin-Godman Coll.                     |

### 7. *Pelecanus thagus*. (PLATE V. B.)

*Pelecanus thagus*, Molina, *Hist. Nat. Chili*, p. 212 (1786) & p. 220 (ed. Gall. 1789); Gmel. *S. N.* i. pt. ii. p. 577 (1788); Latham, *Ind. Orn.* ii. p. 884 (1790); Lacép. & Daudin, in *Buff. Hist. Nat.* (1800, Didot), *Quadr.* xiv. p. 320, *Ois.* xvi. p. 228 (1799); Vieill. *Nouv. Dict. d'Hist. Nat.* xxv. p. 140 (1817).

Saw-billed Pelican, Lath. *Gen. Hist.* x. p. 409 (1824) [Chili].

*Pelecanus fuscus*, Vieill. (nec Gmel.) *Gal. Ois.* ii. p. 192, pl. 276 (1825); Less. *Traité d'Orn.* p. 603 (1831); Blyth, *Cat. Mus. As. Soc.* p. 297 (1849); Schleg. *Mus. Pays-Bas*, vi. *Pelecani*, p. 28 (1863) [part, Chili]; Tacz. *Orn. Pérou*, iii. p. 424 (1886).

*Pelecanus molinæ*, G. R. Gray, *List of B.* pt. iii. p. 189 (1844); *id.* *Gen. B.* iii. p. 668 (1845); Sclater, *P. Z. S.* 1898, p. 259; Elliot, *P. Z. S.* 1899, p. 588, pl. xlv. (immature); G. R. Gray, *Hand-l. B.* iii. p. 130 (1871); Tacz. *Orn. Pérou*, iii. p. 424 (1886); Meyer, *J. f. O.* 1890, p. 165 [Callao]; James, *N. List Chil. B.* p. 8 (1892); Berlepsch & Stolzm. *P. Z. S.* 1892, p. 399 [Peru]; Lane, *Ibis*, 1897, p. 185 [North and Central Chili].

*Pelecanus thagus*, Tsch. *Faun. Peru, Orn.* p. 312 (1846).

*Onocrotalus thagus*, Bonap. *Consp. Av.* ii. p. 164 (1855) [part, Chili, Bolivia]; Tacz. *P. Z. S.* 1874, p. 553 [Central Peru].

*Pelecanus barbieri*, Oustal. *Bull. Soc. Philom.* (7) ii. p. 208 (1878).

*Pelecanus fuscus*, var. *molinæ*, *Ind. As. Nat. Mus. Belg.* ii. p. 11 (1883).

*Adult (probably female) in breeding-plumage.* Very similar to the adult of *P. fuscus*, but the pale straw-coloured occipital crest is much more developed (about 2.5 inches long) and the entire brownish-black underparts are finely streaked with white, each feather having a narrow white shaft-stripe. The base of the culmen and sides of the forehead are covered with warty carunculations. Tail composed of 22 feathers. Iris light yellow; bill yellow, sides and tip of both mandibles red; pouch black with blue stripes; legs and feet slate-colour. Total length about 60 inches, culmen 14.162, wing 22.7, tail 6.5, tarsus 3.6.

The immature bird passes through similar changes of plumage to those already described under *P. fuscus*. One of the birds from Valparaiso is exceptionally large—culmen 15.7 inches, wing 24.5.

According to MS. notes kindly supplied by Mr. E. W. Oates, "A fine adult in the Paris Museum, probably a male, measures: culmen 14.2 inches, wing 24, tarsus 3.4; and a nearly adult female, culmen 13.3 inches, wing 23.5, tarsus 3.4."

*Hab.* Pacific coast of South America from Peru to Central Chili.

|              |                                           |                     |
|--------------|-------------------------------------------|---------------------|
| a ♀ imm. sk. | Payta, Peru, Jan (Admiral A. H. Markham). | Salvin-Godman Coll. |
|--------------|-------------------------------------------|---------------------|

|                |                                                   |                                  |
|----------------|---------------------------------------------------|----------------------------------|
| b. Ad. sk.     | Iquique, Peru ( <i>H. Rowland</i> ).              | Salvin-Godman Coll.              |
| c. Imm. sk.    | Valparaiso, Chili.                                | Capt. Brett [P.].                |
| d, e. Imm. sk. | Valparaiso.                                       | H. Berkeley James,<br>Esq. [P.]. |
| f. ♂ imm. sk.  | Coronel, Chili, July 3 ( <i>A.<br/>A. Lane</i> ). | H. Berkeley James,<br>Esq. [P.]. |
| g. Imm. sk.    | Chili.                                            | C. Crawley, Esq. [P.].           |
| h. Imm. sk.    | Chili.                                            | Purchased.                       |
| i. Skull.      |                                                   |                                  |

8. *Pelecanus erythrorhynchus*.

- \*? *Onocrotalus mexicanus dentatus*, *Hernand. Hist. Mex.* p. 672 fig. (1651) [non-breeding plumage].  
*Onocrotalus mexicanus non dentatus*, *Hernand. Hist. Mex.* p. 673, fig. (1651) [breeding-plumage].  
*Le Pélican à bec dentelé*, *Brisson. Orn.* vi. p. 523 (1760); *Bonnat. Tabl. Encycl. Méth.* i. p. 43 (1790).  
*Saw-billed Pelican*, *Lath. Gen. Syn.* vi. p. 579 (1785) [Mexico].  
*Pelecanus onocrotalus*, *Forst. (nec Linn.) Phil. Trans.* lxii. p. 419 (1772); *Pennant, Arct. Zool.* ii. p. 578 (1785); *Swains. & Richardson, Faun. Bor.-Amer.* p. 472 (1831); *Wilson, Am. Orn.* iii. p. 203 (1832); *Nutt. Man. Orn.* p. 471 (1834) [part, America].  
*Pelecanus erythrorhynchus*, *Gmel. S. N.* i. pt. ii. p. 571 (1788); *Bonnat. Tabl. Encycl. Méth.* i. p. 44 (1790); *Cassin, U.S. Expl. Exped.* p. 355 (1858); *Suckl. Nat. Hist. Wash. Terr.* p. 265 (1859); *Sclater & Salvin, Ibis*, 1859, p. 233; *Baird, B. N. Amer.* p. 868 (1860); *Boardman, P. Bost. Soc. N. H.* ix. p. 130 (1862) [Maine]; *Schleg. Mus. Pays-Bas*, vi. *Pelecani*, p. 35 (1863); *Blakiston, Ibis*, 1863, p. 151 [Saskatchewan]; *Verrill, P. Essex Inst.* iii. p. 159 (1864); *Allen, P. Essex Inst.* iv. p. 89 (1864); *Salvin, Ibis*, 1865, p. 197 [Guatemala, Pacific coast]; *Coues, P. Ac. Philad.* 1866, p. 100 [Colorado and Gila Rivers]; *Dresser, Ibis*, 1866, p. 45 [S. Texas]; *Laur. Ann. Lyc. N. Y.* viii. p. 298 (1867); *Coues, P. Bost. Soc. N. H.* xii. p. 125 (1868) [S. Carolina: winter]; *Elliot, P. Z. S.* 1869, p. 588; *Gillman, Am. Nat.* iv. p. 758 (1871) [Lake Huron]; *Clarke, Am. Nat.* v. p. 252 (1871) [Michigan; E. Florida]; *Trippe, P. Bost. Soc. N. H.* xv. p. 241 (1873) [S. Iowa: spring]; *Ridgw. Ann. Lyc. N. Y.* x. p. 390 (1874) [Illinois]; *Snow, Cat. B. Kansas*, p. 13 (1875); *Allen, Bull. Mus. C. Zool.* iii. pp. 131, 183 (1876) [Kansas]; *Bendire, P. Bost. Soc.* xviii. p. 165 (1877) [breeding in Oregon]; *Mearns, Bull. Nutt. Orn. C.* iv. p. 198 (1879) [Oregon]; *Roberts & Benn. Bull. Nutt. Orn. C.* v. p. 19 (1880) [Minnesota]; *Ridgw. Bull. Nutt. Orn. C.* v. p. 36 (1880); *Maynard, B. E. N. Amer.* p. 466 (1881); *Bendire, Orn. & Oöl.* vii. p. 129 (1882) [Oregon: breeding]; *Chamberl. Bull. Nutt. Orn. C.* vii. p. 106 (1882) [Gulf of St. Lawrence]; *Dubois, Bull. Mus. Belg.* ii. p. 9 (1883); *Baird, Brew., & Ridgw. Water-B. N. Amer.* ii. p. 133, figs. (1884) [habits]; *Drew, Auk*, ii. p. 18 (1885) [Colorado]; *Beckh. Auk*, ii. p. 144 (1885); *Agersb. Auk*, ii. p. 288 (1885) [Dakota]; *Everm. Auk*, iii. p. 89 (1886) [Ventura Co., California]; *A. O. U. Check-I.* p. 112 (1886); *Seton, Auk*, iii. p. 148 (1886)

\* No doubt based on a bird of the present species, to which the teeth have been added.

- [W. Manitoba: breeding]; *Lloyd, Auk*, iv. p. 184 (1887) [W. Texas]; *Ridgw. Man. N. A. B.* p. 82 (1887); *Goos, Auk*, v. p. 25 (1888) [habits]; *Merrill, Auk*, v. p. 141 (1888) [Oregon]; *Smith & Palmer, Auk*, v. p. 147 (1888) [vicinity of Washington]; *Evermann, Auk*, v. p. 346 (1888) [Indiana]; *Scott, Auk*, v. p. 377 (1888) [Florida]; *Pindar, Auk*, vi. p. 312 (1889) [Kentucky and Missouri]; *Bryant, P. Cal. Acad. Sci.* (2) ii. p. 257 (1889) [Lower California]; *Cory, Cat. W. Ind. B.* pp. 85, 136 (1892) [Cuba, Isle of Pines]; *Scott, Auk*, ix. p. 311 (1892) [Caloosahatchie]; *Merrill, Auk*, ix. p. 292 (1892) [Maine]; *Briml. Auk*, x. p. 242 (1893) [N. Carolina]; *Dutcher, Auk*, x. p. 270 (1893) [Long I.]; *Wayne, Auk*, x. p. 337 (1893) [Suwanee R.], xi. p. 85 [Long I.].
- Pelecanus trachyrhynchus*, *Latham, Ind. Orn.* ii. p. 884 (1790); *Shaw, Mus. Lever.* p. 209, pl. (1792); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 117 (1825); *Licht. Abh. Akad. Berl.* 1838, p. 438, pl. iii. fig. 5; *G. R. Gray, List of B.* pt. iii. p. 189 (1844); *id. Gen. B.* iii. p. 668 (1845); *Gamb. J. Acad. N. Sci. Philad.* (2) i. p. 227 (1849) [California]; *Baird, in Stansbury's Rep.* p. 324 (1852); *Woodhouse, Silvr. Rep.* p. 105 (1853); *Newberry, Rep. Expl. Surv.* vi. pt. iv. p. 109 (1857); *Coues, P. Essex Inst.* v. p. 302 (1868) [N. England]; *Sclater, P. Z. S.* 1868, p. 269; *Frantz, J. f. O.* 1869, p. 379 [Costa Rica]; *Ridgw. Ibis*, 1869, p. 350; *G. R. Gray, Hand-l. B.* iii. p. 130 (1871); *Coues, Key N. Amer. B.* p. 300 (1872); *v. Pelzeln, Ibis*, 1873, p. 54; *Coues, B. N.-W.* p. 588 (1874); *Allen, Bull. Nutt. Orn. C.* i. p. 60 (1876) [New Hampshire]; *Purdie, Bull. Nutt. Orn. C.* ii. p. 22 (1877) [New England]; *Sennett, Bull. U. S. Geol. Surv.* iv. p. 63 (1878) [Texas]; *Stearns & Coues, N. Eng. B.-life*, p. 337 (1883); *Sclater, P. Z. S.* 1883, p. 463, pl. xlii., 1884, p. 410.
- Rough-billed Pelican, *Lath. Gen. Syn.* vi. p. 586 (1785); *id. Gen. Hist.* x. p. 408 (1824).
- Pelecanus thagus*, *Steph. (nec Molina) in Shaw's Gen. Zool.* xiii. pt. i. p. 117 (1825); *Drapiez, Dut. Sci. Nat.* viii. p. 384 (1842).
- Onocrotalus hernandezii*, *Wagl. Isis*, 1832, p. 1233.
- Pelican, *Nutt. Man. Orn.* p. 471 (1834).
- Pelecanus americanus*, *And. Orn. Biogr.* iv. p. 88, pl. cccxi. (1838); *id. Synop.* p. 309 (1839); *id. B. Amer.* vii. pp. 20, 179, pl. cccxxii. (1844); *Trippe, P. Essex Inst.* vi. p. 119 (1871) [Minnesota].
- Pelecanus brachydactylus*, *Licht., fide G. R. Gray, Gen. B.* iii. p. 668 (1845).
- Cyrtopelecanus trachyrhynchus*, *Reichenb. Naturl. Syst. Vog.* p. vii (1853); *Bonap. Consp. Av.* ii. p. 163 (1855).
- Pelecanus occipitalis*, *Ridgw. Amer. Sports.* iv. p. 297 (1874) [Nevada].
- Pelecanus brachyrhynchus*, *Cabanis, J. f. O.* 1884, p. 442.
- White Pelican, *McIlwr. Auk*, i. p. 395 (1884) [Lake Ontario]; *Merriam, Auk*, ii. p. 111 (1885).

**Adult.** General colour of plumage pure white; primary quills black, with the basal half of the shaft white; secondaries mostly black, margined with white, the white margins widest on the innermost feathers. Base of lower mandible densely feathered. Tail composed of 24 feathers. Iris pearl-white; naked skin round eye orange; orbit red. Bill orange, paler on the culmen, the nails and cutting-edges of mandible reddish; lower mandible deeper red towards the base; pouch pale yellow, shading into deep orange towards the



base; legs and feet orange-red. Total length about 60 inches, culmen 13·5–14·5, wing 24, tail 7, tarsus 4·8.

In *breeding-plumage* a thick crest of narrow pointed white feathers covers the occiput and nape; and a patch of feathers on the chest and the lesser wing-coverts are lanceolate and of a pale lemon-yellow. An elevated horny ridge is developed along the middle of the terminal half of the culmen.

In *non-breeding-plumage* the horny appendage on the culmen is shed, as well as the crest.

*Younger examples* resemble the adult, but the lesser wing-coverts are brown, margined with sandy white.

*Hab.* Temperate North America, ranging north to about 50° N. latitude, and south in winter to Central America.

|                                     |                                                               |                                  |
|-------------------------------------|---------------------------------------------------------------|----------------------------------|
| <i>a.</i> Ad. sk.                   | North America.                                                | H. Golding, Esq. [P.].           |
| <i>b-d.</i> Ad. sk.                 | North America.                                                | Purchased.                       |
| <i>e, f.</i> Imm. sk.               | 49th Parallel.                                                | N. American Boundary Comm. [P.]. |
| <i>g.</i> Ad. sk.                   | Cuyahoga R., Ohio.                                            | Prof. J. P. Kirtland [P.].       |
| <i>h, i.</i> ♂ ad. sk.              | Corpus Christi, Texas, Dec. 20<br>( <i>F. B. Armstrong</i> ). | Salvin-Godman Coll.              |
| <i>k, l.</i> ♂ ad. et<br>♀ imm. sk. | Huamuchal, Guatemala, Feb.<br>( <i>O. Salvin</i> ).           | Salvin-Godman Coll.              |

### 9. *Pelecanus conspicillatus*.

New Holland Pelican, *Lath. Gen. Hist.* x. p. 402 (1824).

*Pelecanus conspicillatus*, *Temm. Pl. Col.* v. pl. 118 [no. 276] (1824); *Less. Traité d'Orn.* p. 602 (1831); *Drapiez, Dict. Sci. Nat.* viii. p. 385 (1842); *G. R. Gray, List of B.* pt. iii. p. 189 (1844); *id. Gen. B.* iii. p. 668 (1845); *Gould, B. Austr.* vii. pl. 74 (1847); *Bonap. Consp. Av.* ii. p. 161 (1855); *Elsev, P. Z. S.* 1857, p. 28 [N.W. Australia: breeding in March and April]; *Schleg. Mus. Pays-Bas*, vi. *Pelecani*, p. 36 (1863); *Gould, Handb. B. Austr.* ii. p. 486 (1865); *Ramsay, Ibis*, 1866, p. 335; *Elliot, P. Z. S.* 1869, p. 590; *Diggle, Orn. Austr.* p. 123, pl. (1870); *G. R. Gray, Hand-l. B.* iii. p. 130 (1871); *v. Pelzeln, Ibis*, 1873, p. 53 [? type]; *Ramsay, P. Z. S.* 1877, p. 348; *Diggle, B. of Austr.* ii. p. 119, pl. (1877); *D'Alb. Ibis*, 1877, p. 372 [Fly R.]; *Salvad. Orn. Pap.* iii. p. 414 (1882) [Katau R.: Port Moresby]; *Dubois, Bull. Mus. Belg.* ii. p. 10 (1883); *Ramsay, Tabl. L. Austr. B.* p. 25 (1888); *North, Nests & Eggs B. Austr.* p. 368 (1889); *Walker, Ibis*, 1892, p. 257 [Adèle Is., N.W. Australia]; *le Souëf, Ibis*, 1895, p. 423 [Albatross I.]; *Reichenow, J. f. O.* 1897, p. 216 [German New Guinea].  
*Pelecanus australis*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 113 (1825).

*Catoptropelicanus conspicillatus*, *Reichenb. Natürl. Syst. Vög.* p. vii (1853).

*Adult.* Naked space round the eye surrounded by feathers. General colour of plumage pure white; quills and their coverts, scapulars, outer row of lesser wing-coverts, sides of rump, shorter upper tail-coverts, and tail-feathers black; the primaries with the



basal half of the shafts white on the upper surface. Tail composed of 22 feathers.

Gular pouch and mandibles yellowish white, the latter stained with blue, which gradually increases in depth to the tip; apical half of the cutting-edges of the mandibles yellow, gradually increasing in depth to the tip; nail of both mandibles greenish yellow; irides dark brown; eyelash indigo-blue; orbits pale sulphur-yellow, bounded by a narrow ring of pale indigo-blue; legs and upper part of the meta-tarsi yellowish white; feet, webs, and lower part of the meta-tarsi pale bluish grey, the two colours blending with each other at the middle of the metatarsi; nails dull yellowish white (*J. Gould*).

Total length about 60 inches, culmen 17-18, wing 24-25, tail 7.5, tarsus 5.

In *breeding-plumage* there is a moderately long erect crest on the back of the head and neck; the feathers on the chest and the rest of the lesser and median wing-coverts are long and pointed and of a pale straw-yellow.

In *non-breeding plumage* the crest is dropped, and the feathers of the chest and wing-coverts are replaced by white feathers like the rest of the plumage.

In a *nearly mature bird* the feathers of the crest and mane are smoky-brown, tipped with white, and the scapulars, &c. are brownish black instead of deep black.

*Hab.* Australia and Tasmania, ranging north to New Guinea.

|                             |                                      |                                 |
|-----------------------------|--------------------------------------|---------------------------------|
| <i>a</i> Ad. sk.            | Port Essington, N. Australia.        | Capt. W. Chambers,<br>R.N. [P.] |
| <i>b, c</i> Ad. sk.         | Queensland                           | Salvon-Godman Coll              |
| <i>d</i> Ad. sk.            | New South Wales.                     | Hume Coll                       |
| <i>e-h</i> Ad. st. &<br>sk. | New South Wales.                     | Australian Museum<br>[P.]       |
| <i>i</i> Ad. sk.            | South Australia.                     | H. Munt, Esq. [P.]              |
| <i>k</i> Ad. sk.            | Bass Straits ( <i>H. M. Rayner</i> ) | Voy. H.M.S. 'Herald.'           |
| <i>l</i> Imm. sk.           | Green's Island, Tasmania.            | Gould Coll.                     |
| <i>m</i> Skeleton.          | Australia.                           |                                 |
| <i>n</i> Imm. skel.         | Australia.                           | Zool. Soc. Coll.                |
| <i>o</i> Skull.             | Australia.                           |                                 |

## Order XVIII. PYGOPODES.

(By W. R. OGILVIE-GRANT.)

Skull holorhinal and schizognathous; nares pervious; vomer cleft posteriorly for about  $\frac{1}{3}$  or  $\frac{1}{2}$  its length; basipterygoid processes absent; lachrymal not extending downwards to join the quadrato-jugal bar; quadrate with an elongate orbital process; maxillo-palatine processes laminate, not rod-shaped; dentary suture of mandible more or less completely obliterated; angulare truncate posteriorly; furculum without a facet for articulation with the acro-coracoid; pre-ilia not rising up to meet in the middle line above the fused neural spines of the synsacrum; post-ilia much longer than the pre-ilia and vertically compressed; tibio-tarsus with the cnemial crest produced upward far beyond the articular surface of the femur; tarso-metatarsus laterally compressed; outer toe longest. Rhamphotheca simple. Nestling nidifugous. (*W. P. Pycraft.*)

### *Key to the Families.*

- |                                                                                                                                                            |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| I. Hallux on a level with the other toes ;<br>front toes united one to the other<br>by a web ; tail composed of 18 or<br>20 short stiff feathers . . . . . | 1. Colymbidæ, p. 485.    |
| II. Hallux raised above the level of the<br>other toes ; toes provided with wide<br>lateral lobes united at the base ; tail<br>vestigial . . . . .         | 2. Podicipedidæ, p. 502. |

### Family I. COLYMBIDÆ.

Supraorbital grooves very deep; temporal fossæ deep, separated one from another by a median sagittal ridge; lachrymal more or less fused with the nasal; all the vertebræ free; spina externa, no spina interna; metasternum projecting far beyond the posterior lateral processes; ventral lip of the coracoid groove moderately developed; post-ilia not meeting above the neural spines of the synsacrum; tibial bridge ossified; patella vestigial (*W. P. Pycraft*). Sterno-tracheal muscles symmetrical (*H. Gadow*). Accessory semitendinosus absent (*A. H. Garrod*). Two carotids (*A. H. Garrod*). 11 metacarpo-digital remiges. Hallux on a level with the other toes, which are united one to the other by a web. Tail composed of 18 or 20 short stiff feathers.



III. Upper parts dark ash-brown, each feather margined with greyish ash; size larger, wing 14–15 inches.

- A. Ridge of culmen slightly concave, angle of genys indistinct ..... *glacialis*, p. 496.  
 B. Ridge of culmen almost straight, angle of genys strongly marked ..... *adamsi*, p. 500.

### 1. *Colymbus septentrionalis*.

Le petit Plongeon, *Brisson, Orn.* vi. p. 108, pl. x. fig. 2 (1760).

Le Plongeon à gorge rouge, *Brisson, Orn.* vi. p. 111, pl. xi. fig. 1 (1760); *D'Aubent. Pl. Enl.* ix. pl. 55 [no. 308].

*Colymbus lumme* [*Gunn. Act. Nidr.* i. pl. ii. fig. 2 (1761); *Brünn. Orn. Bor.* p. 39 (1764)].

*Colymbus borealis* [*Brünn. Orn. Bor.* p. 39 (1764)]; *Lath. Ind. Orn.* ii. p. 801 (1790); *Vieill. N. Dict. d'Hist. Nat.* xxvii. p. 115 (1818).

*Colymbus stellatus* [*Brünn. Orn. Bor.* p. 39 (1764)]; *Gmel. S. N.* i. pt. ii. p. 587 (1788); *Lath. Ind. Orn.* ii. p. 800 (1790).

*Colymbus septentrionalis*, *Linn. S. N.* i. p. 220 (1766); *Gmel. S. N.* i. pt. ii. p. 586 (1788); *Lath. Ind. Orn.* ii. p. 801 (1790); *Temm. Man. d'Orn.* p. 602 (1815); *Vieill. N. Dict. d'Hist. Nat.* xxvii. p. 115 (1818); *Temm. Man. d'Orn.* ed. ii. p. 916 (1820); *Steph. in Shaw's Gen. Zool.* xii. pt. ii. p. 238 (1824); *Vieill. Gal. Ois.* ii. p. 206, pl. 282 (1825); *Werner, Atl. Ois. d'Eur.* Ord. 15, p. 94 (1828); *Suwaiss. & Richards. Faun. Bor.-Amer.* p. 476 (1831); *Selby, Brit. Orn.* ii. p. 414, pls. lxxviii. & lxxviii.\* (1833); *Schinz, Nat. Abbild. Vög.* p. 366, pl. 129 (1833); *Nils. Skand. Faun.* ii. p. 501 (1835); *Aud. Orn. Biogr.* iii. p. 20, pl. 202 (1835), v. p. 625 (1839); *Gould, B. Eur.* v. pl. 395 (1837); *Körner, Skand. Fogl.* p. 22, pl. 61. figs. 3<sup>a</sup>, 3<sup>b</sup> (1839–46); *Keys. u. Blas. Wirbelth.* p. 236 (1840); *Demid. Voy. Russ. Mérid.* iii. p. 505 (1840); *Schinz, Europ. Faun.* i. p. 357 (1840); *Benoit, Orn. Sicil.* p. 175 (1840); *Cara, Orn. Sard.* p. 201 (1842); *Bouteille, Orn. Dauphiné,* ii. p. 321, pl. 71. fig. 3 (1843); *Aud. B. Amer.* vii. p. 299, pl. 478 (1844); *G. R. Gray, List of B.* pt. iii. p. 148 (1844); *Mühle, Beitr. Orn. Griechentl.* p. 135 (1844); *G. R. Gray, Gen. B.* iii. p. 631 (1848); *Degl. Orn. Europ.* ii. p. 493 (1849); *Reichenb. Natatores,* pl. 10, nos. 44–48 (1850); *Middend. Sibir. Reise,* ii. pt. ii. p. 239 (1851); *Thomps. Nat. Hist. Irel.* iii. p. 203 (1851); *Macgill. Brit. B.* v. p. 301 (1852); *Kjærbohl. Danm. Fugle,* p. 406, pl. li. B., Suppl. pl. 34 (1852); *Watters, N. Hist. B. Irel.* p. 223 (1853); *Heugl. Vög. N.O.-Afr.* p. 68 (1856); *Sunder. Svensk. Fogl.* pl. 53. fig. 1 (1856); *Jaubert & Lapomm. Rich. Orn.* p. 413 (1859); *Schrenck, Reis. Amur-l.* i. p. 496 (1859); *Walker, Ibis,* 1860, p. 167 [Bellot Straits, Arctic America]; *Cooper & Suckl. N. II. Wash. Terr.* p. 279 (1860); *Baird, B. N. Amer.* p. 890 (1860); *Powys, Ibis,* 1860, p. 349 [Epirus & Albania]; *Reinhardt, Ibis,* 1861, p. 14 [Greenland]; *Godman, Ibis,* 1861, p. 92 [N. Norway]; *Coues, P. Ac. Philad.* 1862, p. 228; *Ross, Nat. Hist. Rev.* 1862, p. 290 [Mackenzie R.]; *Radde, Ost-Sibir.* ii. p. 382 (1863); *Swinh. P. Z. S.* 1863, p. 322 [S. coast of China]; *Blakist. Ibis,* 1863, p. 154 [Brit. N. America]; *Swinh. Ibis,* 1863, p. 433 [Formosa]; *Wright, Ibis,* 1864, p. 156 [Malta]; *More, Ibis,* 1865, p. 448; *Newton, Ibis,* 1865, p. 517 [Spitsbergen]; *Gould, B. Gt. Brit.* v. pl. 45 (1865); *Degl. & Gerbe, Orn. Europ.* ii. p. 594 (1867); *Schl. Mus. Pays-Bas,* vi. Urinat. p. 32 (1867); *Whitely, Ibis,* 1867, p. 208 [Hakodadi]; *Coues, P. Essex Inst.* v. p. 309 (1868) [New England]; *Collett, Vid. Selak. Forh. Christ.* 1868, p. 191; *Brown, Ibis,* 1868,

- p. 427 [Vancouver I.]; *Smith, Ibis*, 1868, p. 457 [Portugal]; *Dall, & Bunn. Tr. Chicago Acad.* i. p. 307 (1869) [Yukon]; *Turnb. B. E. Pennsylvania*, p. 49 (1869); *Droste, J. f. O.* 1869, p. 350 [Faroes]; *Fritsch, Nat. Vög. Europa's*, p. 500 (1870), *Atl.* pl. 60. figs. 1 & 3 (1871); *Harting, P. Z. S.* 1871, p. 119 [Davis Straits]; *G. R. Gray, Hand-l. B.* iii. p. 92 (1871); *R. Gray, B. West Scott.* p. 417 (1871); *Goebel, J. f. O.* 1871, p. 151 [S. Russia]; *Sicinhoe, P. Z. S.* 1871, p. 415 [S. coast of China: winter]; *Shelley, B. Egypt*, p. 315 (1872); *Coues, Key N. Am. B.* p. 335 (1872); *Heuglin, Ibis*, 1872, p. 64 [Matthew's Straits]; *id. J. f. O.* 1872, p. 123 [Novaya Zemlya; Waigats]; *Fritsch, J. f. O.* 1872, p. 377 [Bohemia], *Finch, Abh. Nat. Ver. Bremen*, iii. p. 75 (1872); *Dall, Arif. Aleut. Isl.* p. 10 (1874); *Ridgw. Ann. Lyc. N. York*, x. p. 392 (1874) [Illinois]; *Swinh. Ibis*, 1874, p. 163 [Hak dadi]; *Irby, Orn. Gibraltar*, p. 219 (1875); *Danf. & Brown, Ibis*, 1875, p. 433 [Transylvania]; *Seebohm & Brown, Ibis*, 1876, p. 455 [Petchora]; *Dresser, B. Europe*, viii. p. 621, pl. 628 (1876); *Palmen, J. f. O.* 1876, p. 64 [Finland], *David & Oustal. Ois. Chine*, p. 512 (1877); *Tacz. Bull. Soc. Z. Fr.* ii. p. 166 (1877) [Poland]; *Blakist. & Pryer, Ibis*, 1878, p. 211 [Tokio Bay; Yezo]; *Scott, Bull. Nutt. Orn. C.* iv. p. 228 (1879) [New Jersey]; *Seebohm, Ibis*, 1879, p. 161 [Yenesay]; *Kumlien, Bull. U.S. Nat. Mus.* xxv. p. 103 (1879) [Arctic America]; *Gigl. Ibis*, 1881, p. 221 [Italy]; *Maynard, B. E. N. Amer.* p. 494 (1881); *Ridgw. Bull. U.S. Nat. Mus.* xxi. p. 56 (1881); *Merriam, Bull. Nutt. Orn. C.* vi. p. 235 (1881) [N.E. New York], vii. p. 241 (1882) [Canada]; *Neale, P. Z. S.* 1882, p. 654 [Franz Josef Land]; *Seebohm, Ibis*, 1882, p. 232 [Astrakan], p. 383 [Archangel], 1883, p. 35 [Caspian Sea]; *Irby, Ibis*, 1883, p. 190 [Santander]; *Hartl. J. f. O.* 1883, p. 264 [Alaska]; *Nelson, Cruise 'Corwin'*, p. 115 (1883); *Samuels, N. & E. Birds*, p. 557 (1883); *Stearns & Coues, N. Engl. B.-life*, p. 390 (1883); *Raddle, Orn. Coues*, p. 492 (1884); *Coues, Key N. Amer. B.* 1st ed. p. 791 (1884); *Seebohm, Hist. Brit. B.* m. p. 412 (1885); *Dalla Torre & Tschusi, Orn.*, 1885, p. 558, 1887, p. 349, 1888, p. 360, & Suppl. p. 334, 1890, p. 264 [Austro-Hungary]; *Saunders, ed. Yarrell, Brit. B.* iv. p. 112 (1885); *Lutken, Orn.*, 1885, p. 144 [Denmark]; *Merriam, Auk*, ii. p. 63 (1885) [Point Barrow, Alaska; migration]; *Booth, Rough Notes*, iii. pt. xii. (1886); *Gigl. Arif. Ital.* p. 449 (1886); *Slater & Carter, Ibis*, 1886, p. 52 [Iceland]; *Tschusi, Orn.*, 1886, p. 174 [local names]; *Lutken, Orn.*, 1886, p. 97 [Denmark]; *Salvad. Ucc. Ital.* p. 299 (1887); *Grondal, Orn.*, 1887, p. 602 [Iceland]; *Faul, Ibis*, 1887, p. 400 [Portugal]; *Seebohm, Ibis*, 1888, p. 350 [St. Laakoff I.]; *Saunders, Ill. Man. Brit. B.* p. 600 (1889); *Gigl. Arif. Ital.* i. p. 663 (1889), ii. p. 649 (1890), iii. p. 510 (1891); *Seebohm, B. Jap.* p. 364 (1890); *Styan, Ibis*, 1891, pp. 331, 509 [Lower Yangtse]; *Lilford, Col. Fig. Brit. B.* pt. xviii. (1891); *Seebohm, Ibis*, 1892, p. 31 [Hochland]; *La Touche, Ibis*, 1892, p. 503 [Fochow & Swatow]; *Hartert, Ibis*, 1892, p. 522 [Prussia]; *Gatke, Helgoland*, Engl. ed. p. 575 (1895); *Pearson, Ibis*, 1896, p. 213 [Russia, Lapland], p. 219 [Kodguy], p. 225 [Novaya Zemlya]; *Sharpe, Handb. B. Gt. Brit.* iv. p. 187, pl. 114 (1897); *Baltic, Ibis*, 1897, p. 600 [Spitsbergen]; *Clarke, Ibis*, 1898, p. 274 [Franz Josef Land]; *Pearson, Ibis*, 1898, p. 204 [Waigats].
- Grey Spotted Diver, *Pennant, Brit. Zool.* n. p. 414 (1768).  
 Red-throated Diver, *Pennant, Brit. Zool.* ii. p. 415 (1768); *id. Arct. Zool.* ii. p. 520 (1785); *Lath. Gen. Syn.* iii. pt. ii. p. 344 (1785); *id. Gen. Hist.* x. p. 90 (1824); *Nutt. Man. Orn.* p. 519

- (1834); *Yarrell, Hist. Brit. B.* iii. p. 335 (1843); *Knar, Zool.* (2) iv. p. 1499 (1869) [habits].
- Plotus claudicans*, *Scop. Annus*, i. p. 72 (1760).
- Mergus nævia*, *Tunstall, Orn. Brit*, p. 3 (1771); *Bonnat. Tabl. Encycl. Méth.* i. p. 73 (1790).
- Le Plongeon, *D'Aubent. Pl. Enl.* ix. pl. 53 [no. 992]; *Buff. Hist. Nat. Ois.* viii. p. 254, pl. xxi. (1781).
- Le Lumme ou petit Plongeon de la mer du Nord, *Buff. Hist. Nat. Ois.* viii. p. 261 (1781).
- Speckled Diver, *Pennant, Arct. Zool.* ii. p. 519 (1785); *Lath. Gen. Syn.* iii. pt. ii. p. 341 (1785); *id. Gen. Hist.* x. p. 91 (1824).
- Mergus stellatus*, *Bonnat. Tabl. Encycl. Méth.* i. p. 71, pl. 19. fig. 2 (1790).
- Mergus septentrionalis*, *Bonnat. Tabl. Encycl. Méth.* i. p. 72 (1790).
- Urinator striatus*, *Lacép. & Daudin in Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 310, *Ois.* xvi. p. 174 (1799).
- Urinator bailloni*, *Lacép. & Daudin in Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 311, *Ois.* xvi. p. 176 (1799).
- Colymbus rufogularis*, *Meyer & Wolf, Taschenb.* ii. p. 453 (1810).
- Cepphus septentrionalis*, *Pallas, Zoogr. Rosso-As.* ii. p. 342 (1811).
- Cepphus stellatus*, *Pallas, Zoogr. Rosso-As.* ii. p. 344 (1811).
- Boreal Diver, *Lath. Gen. Hist.* x. p. 94 (1824).
- Newcastle Diver, *Lath. Gen. Hist.* x. p. 94 (1824).
- Eudytes septentrionalis*, *Licht. Verz. Doubl.* p. 87 (1823); *Naum. Nat. Vög. Deutschl.* xii. p. 434, pl. 329 (1844); *Alston & Brown, Ibis*, 1873, p. 72 [Archangel]; *Brooke, Ibis*, 1873, p. 349 [Sardinia]; *Bau, etc. J. f. O.* 1876, p. 341 [Germany].
- Colymbus microrhynchus*, *Brehm, Vogelfang*, p. 405 (1855).
- Colymbus glacialis*, *Swinhoe (nec Linn.)*, *Ibis*, 1860, p. 67 [Amoy: winter].
- Urinator lumme*, *Stejn, P. U.S. Nat. Mus.* v. p. 43 (1882); *Baird, Brenc. & Ridgw. Water-B. N. Amer.* ii. p. 457 (1884); *Stejn. Bull. U.S. Nat. Mus.* xxix. p. 15 (1885) [Commander Is.], p. 314 [Kamschatka]; *Turner, Auk*, ii. p. 159 (1885) [Nearer Is., Alaska]; *A. O. U. Checkl.* p. 76 (1886); *Seton, Auk*, iii. p. 147 (1886) [W. Manitoba]; *Scott, Auk*, iii. p. 383 (1886) [Arizona]; *Townsend, Auk*, iv. p. 12 (1887) [N. Alaska]; *Ridgw. Man. N. Am. B.* p. 8 (1887); *Nelson, Rep. N. H. Alaska*, p. 37 (1887); *Smith & Palmer, Auk*, v. p. 147 (1888) [Washington, D.C.]; *Dutcher, Auk*, v. p. 170 (1888) [Long I.]; *Scott, Auk*, v. p. 374 (1888) [Gulf of Florida]; *Chamberl. Auk*, vi. p. 213 (1889) [S. Greenland]; *Clarke, Auk*, vii. p. 320 (1890) [Hudson Bay]; *Loomis, Auk*, viii. p. 55 (1891) [S. Carolina]; *MacFarl. P. U.S. Nat. Mus.* xiv. p. 416 (1891) [Arctic America]; *Hatch, B. Minnesota*, p. 13 (1892); *McIlhcaith, B. Ontario*, ed. 2, p. 34 (1894).
- Urinator septentrionalis*, *Schalow, J. f. O.* 1895, p. 462 [W. Greenland].
- Gavia lumme*, *Allen, Auk*, xiv. p. 312 (1897); *Grinnell, Auk*, xv. p. 124 (1898) [Sitka].

*Adult in breeding-plumage.* General colour above dark ash-brown, with a slight oil-green gloss, many of the feathers often indistinctly spotted with white.\* Sides of the head and neck, as well as the

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\* The white spots, which are characteristic of the winter plumage, become abraded and often entirely disappear in the breeding-plumage. This was correctly pointed out by Adamson ('Some more Scraps about Birds,' p. 199), but contradicted by Seebohm, *Hist. British Birds*, iii. p. 414. Only a few feathers of the upper back are renewed at the partial spring moult.

chin and throat dark grey; a long triangular patch of vinous chestnut down the middle of the fore-neck; top of the head obscurely mottled with blackish; nape, hind-neck, and sides of the lower neck blackish with a slight gloss, each feather margined on the sides with white, producing a strongly streaked appearance; feathers of the sides and flanks, a band across the vent, and most of the under tail-coverts dark ash brown like the back; chest and rest of underparts white; quills dark brown, white towards the basal half of the inner web. Tail dark brown, composed of from 18 or 20 feathers. Ridge of the culmen slightly concave. Iris dark brown; bill black; legs blackish brown, with a greenish tinge on the outside and along the toes, middle of webs yellowish flesh-colour.

*Adult in non-breeding plumage.* General colour above dark ash-brown, each feather with paired white spots on the terminal margin; forehead, top of the head, and back of the neck dark ash, edged on the sides with white, and producing a finely mottled and slightly streaked appearance; sides and flanks much like the back; sides of the face, chin, throat, and rest of underparts pure white; quills and tail-feathers brownish black, the latter tipped with white.

Total length about 24 inches, culmen from feathers on forehead 2.1-2.25, wing 10.9-11.7, tail 1.9-2.1, tarsus 2.9-3, outer toe and claw 3.5-3.8.

*Nestling.* Covered with sooty-brown down, paler on the underparts, which become white as the bird grows older.

*Young in first plumage* have the upper parts much like those of the adult in winter, but the feathers are edged, rather than spotted, with white; the forehead, crown, and hind-neck are mostly dark brownish slate, and the feathers of the fore-neck are fringed with brownish at the extremity, producing a more or less mottled appearance.

*In the adult* the change of the head and neck from winter to summer plumage is produced by a spring moult. Some of the dark ash brown feathers of the upper back are also renewed at this season, but the partial or total disappearance of the white spots from the upper parts is almost entirely due to abrasion.

At the autumn moult the whole of the worn feathers of the upper parts are cast and replaced by the beautiful pearled feathers of the winter plumage; the summer plumage of the head and neck, as well as that of the underparts, is also cast and replaced by new feathers.

*Hab.* Circumpolar: ranging south in winter to the Mediterranean, Black, and Caspian Seas, and Southern China; and on the American continent to California and the Gulf of Florida.

|               |                                                 |                             |
|---------------|-------------------------------------------------|-----------------------------|
| a. ♂ ad. sk.  | Rashua, Kurile Is., June<br>( <i>O. Snow</i> ). | Seebohm Coll.               |
| b. ♀ imm. sk. | Hakodadi, Japan ( <i>T. Blakiston</i> )         | Seebohm Coll.               |
| c. Ad. sk.    | Nagasaki.                                       | F. Ringer, Esq. [P.].       |
| d. Ad. sk.    | Hamilton I., Corea                              | A. G. Wilday, Esq.<br>[P.]. |
| e, f. Ad. sk. | Amoy, China, winter ( <i>R. Swinhoe</i> ).      | Seebohm Coll.               |

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|----------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| <i>g.</i> Ad. sk.                      | Amoy, winter ( <i>R. S.</i> ).                                                                      | Verreaux Coll.                                              |
| <i>h.</i> Ad. sk.                      | Ningpo, Feb. 18 ( <i>R. S.</i> ).                                                                   | Seebohm Coll.                                               |
| <i>i.</i> Ad. sk.                      | Valley of the Yenesay, E.<br>Siberia, lat. $66\frac{1}{2}^{\circ}$ N., June 16<br>( <i>H. S.</i> ). | Seebohm Coll.                                               |
| <i>k.</i> ♀ pull. sk.                  | Tundra of R. Podarata, W.<br>Siberia, Aug. 10.                                                      | Dr. O. Finsch [U.]                                          |
| <i>l.</i> ♀ ad. sk.                    | Ob River, July 25.                                                                                  | Dr. O. Finsch [C.]                                          |
| <i>m.</i> ♂ ad. sk.                    | E. Koomboash, June 27<br>( <i>H. Piotuk</i> ).                                                      | Seebohm Coll.                                               |
| <i>n.</i> Ad. sk.                      | Archangel, summer.                                                                                  | Dr. R. Bowdler<br>Sharpe [P.]                               |
| <i>o.</i> ♀ ad. sk.                    | Smyrna, July 22 ( <i>J. A. H.</i><br><i>Brown</i> ).                                                | Seebohm Coll.                                               |
| <i>p.</i> ♀ ad. sk.                    | Havre, France, March 28<br>( <i>V. Pluche</i> ).                                                    | Hargitt Coll.                                               |
| <i>q.</i> ♂ imm. sk.                   | Heligoland, Jan. ( <i>H. Gütke</i> ).                                                               | Seebohm Coll.                                               |
| <i>r.</i> Juv. sk.                     | Orkney Is.                                                                                          | Purchased.                                                  |
| <i>s, t.</i> Pull. sk. et<br>st.       | Orkney Is.                                                                                          | Gould Coll.                                                 |
| <i>u.</i> Ad. sk.                      | Gt. Britain, winter.                                                                                | Purchased.                                                  |
| <i>v, w.</i> ♂ ad. sk. et<br>♀ ad. st. | Caithness, Scotland, June.                                                                          | Colonel L. II. Irby &<br>Capt. S. G. Reid<br>[P.]           |
| <i>x.</i> ♂ ♀ ad. st.                  | Sutherland, June 5.                                                                                 | G. A. St. Quintin &<br>W. R. Ogilvie-<br>Grant, Esqrs. [P.] |
| <i>y.</i> ♀ vix ad. st.                | Cromarty Firth, Feb. 28.                                                                            | G. A. St. Quintin,<br>Esq. [P.]                             |
| <i>z.</i> ♂ ad. sk.                    | Portobello, Feb. 26 ( <i>T. Hope</i> ).                                                             | Col. H. W. Feilden &<br>J. A. Harvie Brown,<br>Esq. [P.]    |
| <i>a'.</i> Imm. st.                    | Goodwick, S. Wales.                                                                                 | Rev. A. Morgan [P.]                                         |
| <i>b'.</i> Ad. sk.                     | Devonshire, winter.                                                                                 | Montagu Coll.                                               |
| <i>c'.</i> ♀ ad. sk.                   | Christchurch, Hants, Oct. 28.                                                                       | Dr. A. Günther [P.]                                         |
| <i>d'.</i> Ad. sk.                     | Sussex, autumn.                                                                                     | Montagu Coll.                                               |
| <i>e'-g'.</i> Ad. sk.                  | Greenland, June.                                                                                    | Hume Coll.                                                  |
| <i>h', i'.</i> ♂ ♀ ad. sk.             | Fredericshaab, Greenland,<br>July 1 ( <i>P. Müller</i> ).                                           | Col. H. W. Feilden<br>[P.]                                  |
| <i>k'.</i> Pull. sk.                   | Egedesminde, S.W. Greenland<br>( <i>Whymper</i> ).                                                  | Hargitt Coll.                                               |
| <i>l'.</i> ♂ ad. sk.                   | Nanortalik, S. Greenland,<br>June 14 ( <i>R. Müller</i> ).                                          | Hargitt Coll.                                               |
| <i>m'.</i> ♂ ad. sk.                   | Lichtenfels, S. Greenland<br>June 10 ( <i>O. Finsch</i> ).                                          | Dr. R. Bowdler<br>Sharpe [P.]                               |
| <i>n'.</i> Ad. sk.                     | N. America, summer.                                                                                 | Hudson's Bay Co. [P.]                                       |
| <i>o'.</i> Ad. sk.                     | Cape Wilson, Lake Ontario,<br>summer.                                                               | Old Coll.                                                   |
| <i>p'.</i> Ad. sk.                     | Whale Island, N. Alaska<br>July 1 ( <i>Dr. Robertson</i> ).                                         | The Admiralty [P.]                                          |
| <i>q'.</i> Ad. sk.                     | [Alaska] summer.                                                                                    | Capt. Collinson [P.]                                        |
| <i>r', s'.</i> ♀ ad. et<br>imm. sk.    | St. Michael's, Alaska, July,<br>Aug. ( <i>E. W. Nelson</i> ).                                       | Salvin-Godman Coll.                                         |
| <i>t'.</i> Ad. sk.                     | Picmiktalik R., Alaska, July 1<br>( <i>E. W. N.</i> ).                                              | Salvin-Godman Coll.                                         |
| <i>u.</i> Ad. sk.                      | Fort Simpson, summer.                                                                               | B. R. Ross, Esq. [P.]                                       |
| <i>v'.</i> Ad. sk.                     | Vancouver I., winter.                                                                               | J. K. Lord, Esq.<br>[P.]                                    |



|                                   |                                                               |                             |
|-----------------------------------|---------------------------------------------------------------|-----------------------------|
| w'. Ad. sk.                       | Vancouver I., winter.                                         | Mr. Wood [P.].              |
| x'. Ad. sk.                       | California, autumn ( <i>F. Gruber</i> ).                      | Salvin-Godman Coll.         |
| y'. ♂ ad. sk.                     | Monterey, California, April 21.                               | Mr. Alvin Seale [C.].       |
| z'. ♂ imm. sk.                    | Ventura Co., California,<br>Nov. 25 ( <i>H. W. Henshaw</i> ). | Salvin-Godman Coll.         |
| α". Skeleton.                     | Spitsbergen, Aug.                                             | Col. H. W. Feilden<br>[P.]. |
| b'', c''. Skeletons.              | England.                                                      | Purchased.                  |
| d''. ♀ skeleton.                  |                                                               | Salvin-Godman Coll.         |
| e''. Skeleton with-<br>out skull. | England.                                                      | Purchased.                  |
| f'', g''. Sterna.                 | England.                                                      | Purchased.                  |
| h''. Skull.                       | England.                                                      | Purchased.                  |

2. *Colymbus arcticus*.

*Le Plongeon à gorge noir*, *Brissou, Orn.* vi. p. 115 (1760).

*Colymbus arcticus* [*Brünn. Orn. Bor.* p. 40 (1764)]; *Linn. S. N.* i. p. 221 (1766); *Gmel. S. N.* i. pt. ii. p. 587 (1788) [nec America]; *Lath. Ind. Orn.* ii. p. 800 (1790) [part]; *Temm. Man. d'Orn.* p. 509 (1815); *Vieill. N. Dict. d'Hist. Nat.* xxvii. p. 117 (1818) [part]; *Temm. Man. d'Orn.* ed. ii. p. 913 (1820); *Steph. in Shaw's Gen. Zool.* xii. pt. ii. p. 236 (1824); *Werner, Atl. Ois. d'Eur.* Ord. 15, pl. 93 (1828); *Selby, Brit. Orn.* ii. p. 411, pl. lxxvii. (1833); *Nilsen, Skand. Faun.* ii. p. 499 (1835); *Gould, P. Z. S.* 1835, p. 90 [Trebizond]; *Thompson, P. Z. S.* 1837, p. 54 [Co. Antrim]; *Gould, B. Eur.* v. pl. 394 (1837); *Körner, Skand. Fögl.* p. 22, pl. 61, figs. 2 a, 2 b (1839-46); *Schinz, Europ. Faun.* i. p. 357 (1840); *Domid. Voy. Russ. Mérid.* iii. p. 306 (1840); *Keye, u. Blas. Wirbelh.* p. 236 (1840); *Temm. & Schl. Faun. Jap.* p. 123 (1842); *Bouteille, Orn. Dauphiné*, ii. p. 319, pl. 71, fig. 2 (1844); *G. R. Gray, List of B.* pt. ii. p. 118 (1844); *id. Gen. H.* iii. p. 631, pl. cxx. (1848); *Heugl Orn. Europ.* ii. p. 490 (1849); *Reichenb. Natatores*, pl. 10, nos. 49-52 (1850); *Middend. Sibir. Reise*, n. pt. ii. p. 239 (1851); *Thomps. Nat. Hist. Irel.* iii. p. 201 (1851); *Macgill, Brit. B.* v. p. 294 (1852); *Kjærboell Danm. Fugle*, p. 405, pl. h B. suppl. pl. 34 (1852); *Watters, Nat. Hist. B. Irel.* p. 224 (1853); *Sander. Svensk. Fögl.* pl. 53, figs. 2, 3 (1856); *Jaubert & Lapomte Rich. Orn.* p. 413 (1859); *Schrenck, Reise Amur-l.* i. p. 495 (1859); *Godman, Ibis*, 1861, p. 91 [N. Norway]; *Swinhoe, P. Z. S.* 1863, p. 322 [N. China]; *Radde, Ost-Sibir* ii. p. 581 (1863); *Moe, Ibis*, 1865, p. 448 [Gt. Britain]; *Gould, B. Gr. Brit.* v. pl. 44 (1865); *Schl. Mus. Pays-Bas*, vi. Urnat. p. 31 (1867); *Whitely, Ibis*, 1867, p. 208 [Hakodadi]; *Heugl & Gerbe, Orn. Europ.* ii. p. 592 (1867); *Collett, Vid. Selsk. Forh. Christ.* 1868, p. 191; *Dreite, J. f. O.* 1869, p. 350 [Faroes]; *Fritsch, Nat. Voy. Europa* s. p. 499 (1870), *Atl.* pl. 60, figs. 2 & 6 (1871); *G. R. Gray, Hand-l. B.* iii. p. 92 (1871) [part]; *R. Gray, B. West. Scott.* p. 114 (1871); *Heugl J. f. O.* 1872, p. 123 [Novaya Zembla; Waigats]; *Fritsch, J. f. O.* 1872, p. 377 [Bohemia]; *Coues, B. N. West*, p. 721 (1874); *Serretz, J. f. O.* 1875, p. 186 [Trans-lan]; *Danf. & Brown, Ibis*, 1875, p. 433 [Transylvania]; *Seebohm & Brown, Ibis*, 1876, p. 455 [Lower Petchora]; *Dresser B. Europe*, viii. p. 615, pl. 627 (1876) [nec America]; *Palmen, J. f. O.* 1876, p. 64 [Finland]; *Tschusi, J. f. O.* 1877, p. 59 [Austro-Hungary], 1881, p. 212; *Tacz. Bull. Soc. Z. Fr.* ii. p. 166 (1877) [Poland]; *Kumlien, Bull. U. S. Nat. Mus.* xv. p. 103 (1879) [Arctic America]; *Seebohm,*

- Ibis*, 1879, p. 161 [Yenesay Valley]; *Gigl. Ibis*, 1881, p. 221 [Italy]; *Ridgw. Bull. U. S. Nat. Mus.* xxi. p. 55 (1881); *Seebohm, Ibis*, 1882, p. 232 [Astrakan], p. 383 [Archangel]; *id. Ibis*, 1883, p. 35 [Caspian Sea]; *Irby, Ibis*, 1883, p. 190 [Santander]; *Radde, Orn. Caucas.* p. 491 (1884); *Lütken, Orn.*, 1885, p. 143 [Denmark]; *Saunders, ed. Yurrell, Brit. B.* iv. p. 105 (1885); *Seebohm, Hist. Brit. B.* iii. p. 407 (1885); *Dalla-Torre & Tschusi, Orn.*, 1885, p. 557, 1887, p. 347, 1888, p. 360, & Suppl. p. 333, 1890, p. 263 [Austro-Hungary]; *Booth, Rough Notes*, iii. pt. xii. (1886); *Tschusi, Orn.*, 1886, p. 174 [local names]; *Gigl. Arif. Ital.* p. 447 (1886); *Tait, Ibis*, 1887, p. 400 [Portugal]; *Salvad. Ucc. Ital.* p. 298 (1887); *Saunders, Ill. Man. Brit. B.* p. 697 (1889); *Radde & Walter, Orn.*, 1889, p. 128 [Transcaepia]; *Gigl. Arif. Ital.* i. p. 662 (1889), ii. p. 649 (1890), iii. p. 510 (1891); *Seebohm, B. Jap.* p. 363 (1890); *Erans, Ibis*, 1891, p. 82 [incubation lasts 28 days]; *Hartert, Ibis*, 1892, p. 522 [E. Prussia]; *Seebohm, Ibis*, 1892, p. 31 [Heligoland]; *Reiser, Orn. Balcanica*, ii. p. 204 (1894); *Gätke, Heligoland*, Engl. ed. p. 575 (1895); *Pearson, Ibis*, 1896, p. 213 [Russian Lapland], p. 219 [Kolguev], p. 225 [Novaya Zemlya]; *Sharpe, Handb. B. Gr. Brit.* iv. p. 185 (1897); *Pearson, Ibis*, 1898, p. 204 [Waigats; Dolgoi].
- Black-throated Diver, *Pennant, Arct. Zool.* ii. p. 520 (1785); *Lath. Gen. Syn.* iii. pt. ii. p. 343 (1785); *id. Gen. Hist.* x. p. 89 (1824); *Yarrell, Hist. Brit. B.* iii. p. 328 (1843); *Knor, Zoologist* (2) iv. p. 1504 (1869) [habits].
- Mergus arcticus*, *Bonnat. Tabl. Encycl. Méth.* i. p. 71, pl. 19. fig. 4 (1790) [part].
- Colymbus ignotus*, *Bechst. Nat. Deutschl.* ii. p. 782 (1791).
- Urinator arcticus*, *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo, Didot), *Quad.* xiv. p. 311, *Ois.* xvi. p. 182 (1799); *Stejn. P. U.S. Nat. Mus.* v. p. 43 (1882); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 452 (1884).
- Colymbus leucopus*, *Bechst. Orn. Taschenb.* pt. ii. p. 364 (1802).
- Colymbus atrogularis*, *Meyer & Wolf, Taschenb.* ii. p. 499, pl. (1810).
- Colymbus arcticus*, *Pallas, Zoogr. Rosso-As.* ii. p. 341 (1811).
- Colymbus balthicus*, *Hornsch. & Schilling, Verz. Pommersch. Vög.* p. 21; *Brehm, Handb. Vög. Deutschl.* p. 975 (1831).
- Colymbus macrorhynchos*, *Brehm, Handb. Vög. Deutschl.* p. 974 (1831).
- Eudytes arcticus*, *Licht. Verz. Doubl.* p. 87 (1831); *Naum. Nat. Vög. Deutschl.* xii. p. 418, pl. 328 (1844); *Böck, J. f. O.* 1865, p. 367 [moult]; *Alston & Brown, Ibis*, 1873, p. 72 [Archangel]; *Bau, etc., J. f. O.* 1877, p. 341 [Germany].
- Colymbus megarrhynchus*, *Brehm, Vogelfang*, p. 405 (1855).

*Adult in breeding-plumage.* General colour above glossy black; scapulars and a band of feathers on each side of the upper back with wide subterminal white bands, or quadrate spots, giving these parts a tessellated appearance; wing-coverts spotted with white. Head and back of neck dove-grey, shading gradually into sooty-black on the chin and throat: fore-neck deep shining purplish black, bordered on the sides and above by series of black feathers, margined with white on the sides, giving these parts a strongly striped appearance; base of neck and sides of chest striped in a very similar manner, but the white marginal bands wider; sides and flanks mostly black; a band crossing the vent between the thighs,

and most of the longest under tail-coverts sooty-black; rest of underparts, including the under wing-coverts, pure white; quills and tail-feathers black. Tail composed of 16 or 18 feathers. Ridge of the culmen distinctly convex and similar to that of *C. glacialis*, but smaller. Iris hazel-brown; bill bluish black, lighter towards the base; legs and feet greenish, the inner side of the tarsus inclining to flesh-colour. Total length about 28 inches, culmen from feathers on forehead 2.1-2.4, wing 11.7-13, tail 2.1-2.4, tarsus 3.1-3.2, outer toe and claw 4.1-4.3.

*Adult in non-breeding plumage.* General colour above deep ashy brown; top of the head and back of the neck ash, shading into smoky-brown on the sides of the neck; sides and flanks brownish black; chin, throat, fore-neck, and rest of underparts pure white.

*The spring moult* in this species is much more extensive than in *C. septentrionalis*, for not only the head and neck but the whole of the upper parts are cast and replaced by the breeding-plumage.

*Young in down.* Upper parts dark smoky-brown, underparts paler.

*Young in first plumage* somewhat resemble the adult in winter plumage, but all the feathers of the back, wing-coverts, scapulars, rump, and upper tail-coverts are widely margined with grey.

*Hab.* North of Europe and Asia; ranging westward to the Faroe Islands and Iceland, and south in winter to the Mediterranean, Black and Caspian Seas.

|                          |                                                |                                               |
|--------------------------|------------------------------------------------|-----------------------------------------------|
| a. Ad. sk.               | Great Britain, summer.                         | Old Coll.                                     |
| b. Imm. sk.              | Great Britain, winter.                         | Old Coll.                                     |
| c, d. ♂ ♀ ad. st.        | Sutherland, June.                              | Col. L. H. Irby &<br>Capt. S. G. Reid<br>[P]. |
| e, f. Ad. et pul.<br>sk. | Loch Knockie, Inverness, May<br>& July (E. H.) | Hargitt Coll.                                 |
| g. Imm. st.              | Fullham, Middlesex                             | W. J. Broderip, Esq.<br>[P].                  |
| h. Imm. sk.              | Beeches, Suffolk, Nov.                         | Seebohm Coll.                                 |
| i. ♀ imm. sk.            | Hayre, France, Nov. 25<br>(V. Pluche)          | Hargitt Coll.                                 |
| k. ♂ ad. st.             | Alfheim, N. Norway, June.                      | E. Lort Phillips,<br>Esq. [P].                |
| l, m. ♂ ad. sk.          | Valley of the Yenisey,<br>E. Siberia, June 16. | Seebohm Coll.                                 |
| n. ♀ ad. sk.             | Hakodadi, Japan, May<br>(T. Blakiston).        | Seebohm Coll.                                 |
| o-r. Ad. et imm.<br>sk.  | Yokohama, winter (H. Pryer).                   | Seebohm Coll.                                 |
| o. ♀ ad. sk.             | Nagasaki, Dec. 25.                             | F. Ringer, Esq. [P].                          |
| t, u. Sterna.            |                                                |                                               |

**Subsp. a. *Colymbus pacificus*.**

Speckled Diver or Loon, *Edw. Nat. Hist. B.* iii. p. 146, pl. 146 (1750).

\* ♂ Striped Diver, *Pennant, Arct. Zool.* ii p. 519 (1785); *Lath. Gen. Syn.* iii. pt. ii. p. 345 (1785); *id. Gen. Hist.* x. p. 93 (1824).

\* ♀ *Colymbus striatus*, *Gmel. S. N.* i. pt. ii. p. 586 (1788); *Lath. Ind.*

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\* Probably founded on a bird of this species assuming the breeding-plumage.

*Orn.* ii. p. 802 (1790); *Temm. Man. d'Orn.* p. 604 (1815); *Vieill. N. Dict. d'Hist. Nat.* xxvii. p. 119 (1818).

- \* *Colymbus arcticus*, *Gmel. S. N.* i. pt. ii. p. 587 (1788) [part; America]; *Lath. Ind. Orn.* ii. p. 800 (1790) [part]; *Sicains. & Richards. Faun. Bor.-Amer.* p. 475 (1831); *Aud. Orn. Biogr.* iv. p. 345, pl. 346 (1838); *id. B. Amer.* vii. p. 295, pl. 477 (1844); *Baird, B. N. Amer.* p. 888 (1860); *Walker, Ibis*, 1860, p. 167 [Bellet Straits, Arctic America]; *Blakiston, Ibis*, 1863, p. 154 [Brit. N. America]; *Coues, P. Esser Inst.* v. p. 309 (1868) [New England]; *Dall & Bann. Tr. Chicago Ac.* i. p. 307 (1869); *Harting, P. Z. S.* 1871, p. 119 [Bering Straits]; *Coues, Key N. Am. B.* p. 334 (1872) [part; N. America]; *Finsch, Abh. Nat. Ver. Bremen*, iii. p. 74 (1872); *Ridgw. Ann. Lyc. N. York*, x. p. 392 (1874) [Illinois]; *Stearns & Coues, N. Engl. B.-life*, p. 389 (1883); *Coues, Key N. Amer. B.* 2nd ed. p. 791 (1884) [part].

*Mergus striatus*, *Bonnat. Tabl. Encycl. Méth.* i. p. 73 (1790).

Black-throated Diver, *Nutt. Man. Orn.* p. 517 (1834) [part].

*Colymbus pacificus*, *Lawr. in Baird's B. N. Amer.* p. 889 (1860) [Puget Sound, California]; *Cooper & Suckl. N. H. Wash. Terr.* p. 279 (1860); *Coues, P. Ac. Philad.* 1862, p. 228, 1866, p. 100; *id. Ibis*, 1866, p. 272 [habits]; *Brown, Ibis*, 1868, p. 427 [Vancouver I.]; *Ridgw. Bull. U. S. Nat. Mus.* xxi. p. 56 (1881); *Merriam, Auk*, ii. p. 63 (1885) [Point Barrow, Alaska; migration].

*Colymbus arcticus*, var. *pacificus*, *Ross, Nat. Hist. Rev.* 1862, p. 289 [Mackenzie R.]; *Coues, Key N. Amer. B.* p. 335 (1872); *id. B. N.-West*, p. 722 (1874).

*Colymbus arcticus pacificus*, *Coues, Key N. Amer. B.* 2nd ed. p. 791 (1884).

*Urinator arcticus*, *A. O. U. Checkl.* p. 76 (1886); *Ridgw. Man. N. Am. B.* p. 7 (1887) [part]; *Nelson, Rep. N. H. Alaska*, p. 36 (1887); *Clarke, Auk*, vii. p. 320 (1890); *MacFarl. P. U. S. Nat. Mus.* xiv. p. 416 (1891) [Arctic America]; *Hatch, B. Minnesota*, p. 12 (1892); *Dutcher, Auk*, x. p. 265 (1893) [Long. I.]; *McIlhraith, B. Ontario*, ed. 2, p. 32 (1894).

*Urinator pacificus*, *Stejn. P. U. S. Nat. Mus.* v. p. 43 (1882); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 455 (1884); *Turner, Auk*, ii. p. 159 (1885) [Nearer Is., Alaska]; *A. O. U. Checkl.* p. 76 (1886); *Evermann, Auk*, iii. p. 88 (1886) [Ventura Co., Cal.]; *Nelson, Rep. N. H. Alaska*, p. 37 (1887); *Ridgw. Man. N. Amer. B.* p. 8 (1887); *MacFarl. P. U. S. Nat. Mus.* xiv. p. 416 (1891) [Arctic America]; *Stejn. P. U. S. Nat. Mus.* xv. p. 291 (1892) [Hakodadi]; *Lawr. Auk*, ix. p. 353 (1892) [Washington, D.C.]

*Gavia arctica*, *Allen, Auk*, xiv. p. 312 (1897).

*Gavia pacifica*, *Allen, Auk*, xiv. p. 312 (1897); *Grinnell, Auk*, xv p. 124 (1898) [Sitka].

*Adult in breeding-plumage.* Differs only from typical *C. arcticus* in the paler colour of the nape and back of the neck, which is dull smoky-white. Tail composed of 16 or 18 feathers. Total length about 24 inches, culmen from feathers on forehead 2·2-4, wing 11·4-11·7, tail 2·2-3, tarsus 2·7-3, outer toe and claw 3·6-4.

*Adult in non-breeding plumage and young* similar to *C. arcticus*.

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\* I have not seen any specimen of typical *C. arcticus* from North America; all appear to belong to the pale-naped form *C. pacificus*.

*Hab.* Northern and North-western parts of North America, ranging south in winter to California. It has been recorded from Japan.

|                     |                                                           |                            |
|---------------------|-----------------------------------------------------------|----------------------------|
| a. Ad. sk.          | Winter I., Melville Peninsula,<br>Arctic America, summer. | Old Coll.                  |
| b. Ad. sk.          | Repulse Bay.                                              | Dr. J. Rae [P.]            |
| c. Ad. sk.          | Gt. Slave Lake, summer.                                   | B. R. Ross, Esq.<br>[P.]   |
| d. Ad. sk.          | Kotzebue Sound, Alaska,<br>summer.                        | Old Coll.                  |
| e. Ad. sk.          | [Kotzebue Sound], summer.                                 | Capt. Collinson [P.]       |
| f. ♀ ad. sk.        | St. Michael's, Alaska, May 2.                             | Salvin-Godman Coll.        |
| g. Ad. sk.          | St. Michael's, June 29 (E. W.<br>Nelson).                 | Salvin-Godman Coll.        |
| h. Ad. sk.          | California, summer.                                       | J. H. Gurney, Esq.<br>[P.] |
| i, k. * ♂ ♀ ad. sk. | Monterey, California, May.                                | Mr Alvin Seale [C.]        |
| l. ♀ imm. sk.       | Ventura, Nov. 20 (H. W.<br>Henshaw).                      | Salvin-Godman Coll.        |

### 3. *Colymbus glacialis*.

Le Grand Plongeon, *Brisson, Orn. vi. p. 105, pl. x. fig. 1* (1760);  
*D'Aubent. Pl. Enl. ix. pl. 52* [no. 914]; *Buff. Hist. Nat. Ois. viii.*  
*p. 251* (1781).

Le Plongeon tacheté, *Brisson, Orn. vi. p. 117* (1760).

Le Grand Plongeon tacheté, *Brisson, Orn. vi. p. 120, pl. xi. fig. 2*  
(1760).

*Colymbus imber seu immer*, [*Gunnerus, Trondh. Selak. Skr. i. pl. iii.*  
(1761).]

*Colymbus immer* [*Brunn. Orn. Bor. p. 38* (1764)]; *Linn. S. N. i.*  
*p. 2* [1766]; *Geol. S. N. i. pt. ii. p. 588* (1788); *Lath. Ind.*  
*Orn. ii. p. 800* (1790); *Piehl N. Dict. d'Hist. Nat. xxvii. p. 116*  
(1818).

*Colymbus torquatus* [*Brunn. Orn. Bor. p. 41* (1764)]; *Keys. u. Blas.*  
*Winkelth. p. 236* (1840); *Cooper & Suckl. N. H. Wash. Terr. p. 278*  
(1860); *Baird, B. N. Amer. p. 888* (1860); *Coues, P. Ac. Philad.*  
*1861, p. 248* [Labrador], 1862, p. 227, 1864, p. 21, 1866, p. 100  
[Colorado R.]; *Ross, Nat. Hist. Rec. 1862, p. 289* [Mackenzie R.];  
*Blakist. Ibis, 1863, p. 154* [Brit. N. America]; *Dresser, Ibis,*  
*1866, p. 46* [N. Texas]; *Brown, Ibis, 1868, p. 427* [Vancouver I.];  
*Coues, P. Essex Inst. v. p. 309* (1868) [New England]; *Dall &*  
*Bann. Tr. Chicago. Ac. i. p. 307* (1869) [Yukon]; *Maynard, P.*  
*Bost. Soc. N. H. xiv. p. 385* (1872) [New Haven]; *Coues, Key N.*  
*Am. B. p. 334* (1872); *Dall, Arif. About. p. 10* (1873) [Shumagin  
Is.]; *Coues, B. N. West, p. 719* (1874); *Kumlien, Bull. U. S. Nat.*  
*Mus. xv. p. 103* (1879) [Arctic America]; *Scott, Bull. Nutt. Orn.*  
*C. ix. p. 228* (1879) [New Jersey]; *Roberts & Benner, Bull. Nutt.*  
*Orn. C. v. p. 20* (1880) [Minnesota]; *Merriam, Bull. Nutt. Orn. C.*  
*vi. p. 235* (1881); *Ridgw. Bull. U. S. Nat. Mus. xxi. p. 55* (1881);  
*Maynard, B. E. N. Amer. p. 493* (1881) [N.E. New York], vii  
*p. 241* (1882) [Canada]; *Samuels, N. & E. Birds, p. 555* (1883);

\* The male, probably a wounded or sickly individual, dated 24th May, is still in very worn winter plumage, the summer plumage is beginning to make its appearance on the wing-coverts only. The female killed on the 14th May is in full summer plumage.

- Coues & Prentiss, Bull. U.S. Nat. Mus.* xxvi. p. 110 (1883) [Columbia Distr.]; *Stearns & Coues, N. Engl. B.-life*, p. 388 (1883); *Coues, Key N. Amer. B.* 2nd ed. p. 789 (1884); *Agerseb. Auk*, ii. p. 289 (1885) [S.E. Dakota].
- Colymbus glacialis*, *Linn. S. N.* i. p. 221 (1766); *Gmel. S. N.* i. pt. ii. p. 583 (1788); *Lath. Ind. Orn.* ii. p. 799 (1790); *Borckh., etc. Teutsche Orn.* pl. 116 (1800-37); *Wilson, Am. Orn.* ix. p. 84, pl. 74. fig. 3 (1814); *Temm. Man. d'Orn.* p. 597 (1815); *Vieill. N. Dict. d'Hist. Nat.* xxvii. p. 116 (1818); *Temm. Man. d'Orn.* ed. ii. p. 910 (1820); *Steph. in Shaw's Gen. Zool.* xii. pt. ii. p. 233, pl. 61 (1824); *Werner, Atl. Ois. d'Eur.* Ord. 15, pl. 92 (1828); *Swains. & Richards. Faun. Bor.-Amer.* p. 474 (1831); *Selby, Brit. Orn.* ii. p. 406, pl. lxxvi. (1833); *Schinz, Nat. Abbild., Vög.* p. 365, pl. 129 (1833); *Nilss. Skand. Faun.* ii. p. 497 (1835); *Gould, B. Eur.* v. pl. 393 (1837); *Aud. Orn. Biogr.* iv. p. 43, pl. 306 (1838); *Körner, Skand. Fogl.* p. 22, pl. 61. fig. 1 (1839-46); *Demid. Voy. Russ. Mérid.* iii. p. 306 (1840); *Schinz, Europ. Faun.* i. p. 356 (1840); *Bouteille, Orn. Dauphiné*, ii. p. 317, pl. 71. fig. 1 (1843); *G. R. Gray, List of B.* pt. iii. p. 148 (1844); *Aud. B. Amer.* v. p. 282, pl. 476 (1844); *G. R. Gray, Gen. B.* iii. p. 631 (1848); *Degl. Orn. Eur.* ii. p. 488 (1849); *Reichenb. Natatores*, pl. 10, nos. 53-56 (1850); *Thomps. Nat. Hist. Irel.* iii. p. 194 (1851); *Harcourt, P. Z. S.* 1851, p. 146 [Madeira]; *Macgill. Brit. B.* v. p. 283 (1852); *Kjærboll. Danm. Fugle*, p. 404, pl. li B, Suppl. pl. 34 (1852); *Watters, N. Hist. B. Irel.* p. 224 (1853); *Sunder. Svensk. Fogl.* pl. 53. fig. 4 (1856); *Newberry, Rep. Expl. Surv.* vi. pt. iv. p. 110 (1857) [California and Oregon]; *Jaubert & Lacomme. Rich. Orn.* p. 412 (1859); *Walker, Ibis*, 1860, p. 167 [Bellot Straits, Arctic America]; *Reinhardt, Ibis*, 1861, p. 14 [Greenland]; *Fitz. Atl. Nat., Vög.* fig. 340 (1864); *Gould, B. Gr. Brit.* v. pl. 43 (1865); *Degl. & Gerbe, Orn. Europ.* ii. p. 590 (1867); *Schl. Mus. Pays-Bas*, vi. *Urinat.* p. 30 (1867); *Smith, Ibis*, 1868, p. 457 [Portugal]; *Collett, Vid. Selsk. Forh. Christ.* 1868, p. 191; *Droste, J. f. O.* 1869, p. 349 [Faroes]; *Turnb. B. E. Pennsylvania*, p. 49 (1869); *Fritsch, Nat. Vög. Europa's*, p. 498 (1870), *Atl.* pl. 60. figs. 4, 5 (1871); *G. R. Gray, Hand-l. B.* iii. p. 92 (1871); *Gray, B. West. Scotl.* p. 411 (1871); *Fritsch, J. f. O.* 1872, p. 377 [Bohemia]; *Brooke, Ibis*, 1873, p. 349 [Sardinia]; *Dunf. & Brown, Ibis*, 1875, p. 433 [Transylvania]; *Rowley, Orn. Misc.* i. p. 125 (1876); *Palmén, J. f. O.* 1876, p. 64 [Finland]; *Tacz. Bull. Soc. Z. Fr.* ii. p. 166 (1877) [Poland]; *Dresser, B. Eur.* viii. p. 609, pl. 626 (1880); *Gigl. Ibis*, 1881, p. 221 [Italy]; *Irby, Ibis*, 1883, p. 190 [Santander]; *Hartl. J. f. O.* 1883, p. 283 [Alaska]; *Saunders, ed. Yarrell, Brit. B.* iv. p. 96 (1885); *Seebohm, Hist. Brit. B.* iii. p. 402 (1885); *Dalla Torre & Tschusi, Orn.* 1885, p. 557, 1887, p. 349, 1888, Suppl. p. 334, 1890, p. 264 [Austro-Hungary]; *Lütken, Orn.* 1885, p. 144 [Denmark]; *Tschusi, Orn.* 1886, p. 174 [local names]; *Gigl. Arif. Ital.* p. 446 (1886); *Booth, Rough Notes*, iii. pt. xiv. (1887); *Salvad. Ucc. Ital.* p. 298 (1887); *Tait, Ibis*, 1887, p. 400 [Portugal]; *Gröndal, Orn.* 1887, pp. 589, 596 [Iceland: local name]; *Saunders, Ill. Man. Brit. B.* p. 693 (1889); *Gigl. Arif. Ital.* i. p. 661 (1889), ii. p. 649 (1890); *Seebohm, Ibis*, 1892, p. 31 [Heligoland]; *Lilford, Col. Fig. Brit. B.* pt. xxv. (1893); *Gätke, Heligoland, Engl. ed.* p. 572 (1895); *Pearson, Ibis*, 1895, p. 246 [Iceland]; *Sharpe, Handb. B. Gr. Brit.* iv. p. 178 (1897).
- Great Northern Diver, *Pennant, Brit. Zool.* ii. p. 413 (1768);

- Farrell, Hist. Brit. B.* iii. p. 320 (1843); *Knor, Zoologist*, (2) iv. p. 1503 (1869) [habits].
- L'Imbrim des Mers du Nord, D'Aubent. Pl. Enl.* ix. pl. 54 [no. 952]; *Buff. Hist. Nat. Ois.* viii. p. 258, pl. xxii. (1781).
- Imber Diver, Pennant, Arct. Zool.* ii. p. 518 (1785); *Lath. Gen. Syn.* iii. pt. ii. p. 340 (1785); *id. Gen. Hist.* x. p. 87 (1824).
- Northern Diver, Pennant, Arct. Zool.* ii. p. 518 (1785); *Lath. Gen. Syn.* iii. pt. ii. p. 377 (1785); *id. Gen. Hist.* x. p. 84 (1824).
- Mergus glacialis, Bonnat. Tabl. Encycl. Méth.* i. p. 70, pl. 19. fig. 1 (1790).
- Mergus immer, Bonnat. Tabl. Encycl. Méth.* i. p. 72 (1790).
- Urinator glacialis, Lacép. & Daudin, in Buff. Hist. Nat.* (18mo Didot), *Quadr.* xiv. p. 311, *Ois.* xvi. p. 179, pl. 14 (1799); *Schælew, J. f. O.* 1895, p. 461 [W. Greenland].
- Urinator immer, Lacép. & Daudin, in Buff. Hist. Nat.* (18mo Didot), *Quadr.* xiv. p. 310, *Ois.* xvi. p. 171 (1799); *Stejn. P. U.S. Nat. Mus.* v. p. 43 (1882); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 446 (1884).
- Cepphus torquatus, Pallas, Zoogr. Rosso-As.* ii. p. 340 (1811).
- Cepphus imber, Pallas, Zoogr. Rosso-As.* ii. p. 344 (1811).
- Colymbus hyemalis, Brehm, Lehrb. Eur. Vog.* ii. p. 683 (1824); *id. Handb. Vog. Deutschl.* p. 972 (1831).
- Colymbus maximus, Brehm, Handb. Vog. Deutschl.* p. 971 (1831).
- Loon or Great Northern Diver, Nutt. Man. Orn.* p. 513 (1844).
- Eudytes glacialis, Naum. Nat. Vog. Deutschl.* xii. p. 397, pl. 327 (1844); *Bau, etc. J. f. O.* 1877, p. 341 [Germany].
- Colymbus glacialis, var. torquatus, Ridgw. Ann. Lyc. N. York*, x. p. 392 (1874) [Illinois].
- Colymbus adamsi, Babbington (nec G. R. Gray), B. Suffolk*, p. 246, pl. vii. (1886).
- Colymbus arcticus, Slater & Carter, Ibis*, 1886, p. 51 [North Iceland].
- Urinator imber, A. O. U. Check-l.* p. 75 (1886); *Evermann, Auk*, iii. p. 83 (1886) [Ventura Co., Cal.]; *Seton, Auk*, iii. p. 147 (1886) [W. Manitoba]; *Lloyd, Auk*, iv. p. 184 (1877) [W. Texas]; *Ridgw. Man. N. Am. B.* p. 7 (1887); *Nelson, Rep. N. H. Alaska*, p. 35 (1887); *Warren, B. Pennsylv.* p. 3 (1888); *Merrill, Auk*, v. p. 140 (1888) [Oregon]; *Chapman, Auk*, v. p. 208 (1888) [Florida]; *Everm. Auk*, v. p. 345 (1888) [Indiana]; *Scott, Auk*, v. p. 373 (1888) [Gulf of Florida]; *Breast Auk*, v. pp. 389, 390 (1888) [Massachusetts]; *Chamberl. Auk*, vi. p. 212 (1889) [S. Greenland]; *Clarke, Auk*, vii. p. 320 (1890) [Hudson Bay]; *Loomis, Auk*, vii. p. 55 (1891) [S. Carolina]; *MacFarl. P. U.S. Nat. Mus.* xiv. p. 416 (1891) [Arctic America]; *Hatch, B. Minnesota*, p. 10 (1892); *Mackay, Auk*, ix. p. 292 (1892) [migration]; *McIlverath, B. Ontario*, ed. 2, p. 30 (1894); *Merrill, Auk*, xiv. p. 354 (1897) [Idaho].
- Gavia imber, Allen, Auk*, xiv. p. 312 (1897); *Grinnell, Auk*, xv. p. 124 (1898) [Sitka].

*Adult in breeding-plumage.* General colour above glossy black, all the feathers truncate and ornamented with twin pairs of quadrate white spots, which are largest on the scapulars; wing-coverts, lower back, rump, sides, and flanks like the back, but the white spots are rounded and much smaller. Head and neck black, with a purplish shade on the crown, changing into dull green on the sides of the head



and upper part of the neck; sides and fore part of the base of the neck purplish blue, or dark greenish blue; base of hind-neck purplish bronze; across the base of the throat a band of black feathers margined on either side with white, and a similar but larger band on each side of the neck, forming a collar, interrupted on the back and front of the neck; sides of the chest and breast black with some greenish gloss, and streaked with white; rest of underparts pure white, with the exception of a band of feathers across the vent, and the longer under tail-coverts, which are mostly deep sooty brown; quills and tail-feathers brownish black, with a slight greenish gloss. Tail composed of 20 feathers. Iris reddish; bill blackish horn, the cutting-edges and tip light bluish horn; legs blackish, lighter on the inner side. Total length about 30–32 inches, culmen from feathers on forehead 3·1–3·5, wing 13·9–14·5, tail 2·8–2·9, tarsus 3·4–3·65, outer toe and claw 4·5–4·9.

*Adult in non-breeding plumage.* General colour above dark brown, each feather margined with ash-grey; head and neck brown, with a slight greenish gloss, merging into white on the throat and fore-neck; wing-coverts, sides, and flanks like the back; a band of feathers across the vent, and the longer under tail-coverts mostly brown; rest of the underparts pure white; quills and tail-feathers brownish black, the former glossed with bronze.

*Nestling.* Head, neck, upper parts, and sides deep sooty-brown, paler on the throat and fore-neck; chest and underparts pure white.

*Young* very similar to the adult in winter plumage, but the bill is much shorter.

*Hab.* Northern parts of North America; ranging east to Greenland, Iceland, the Faroe Islands, and North-western Europe, and west to the Asiatic shores of Bering Straits; south in winter to California, the Gulf of Mexico, and the Mediterranean.

|                                |                                                               |                                |
|--------------------------------|---------------------------------------------------------------|--------------------------------|
| <i>a.</i> Ad. sk.              | North Europe, summer.                                         | Salvin-Godman Coll.            |
| <i>b.</i> Ad. sk.              | Great Britain, summer.                                        | Old Coll.                      |
| <i>c.</i> Ad. st.              | Pembrokeshire, autumn.                                        | Rev. A. Morgan [P.].           |
| <i>d.</i> Ad. sk.              | Cornwall, summer.                                             | Montagu Coll.                  |
| <i>e.</i> Ad. sk.              | Devonshire, winter.                                           | Montagu Coll.                  |
| <i>f.</i> Ad. st.              | Cley, Norfolk, winter.                                        | Purchased.                     |
| <i>g, h.</i> Ad. sk.           | Greenland, June.                                              | Hume Coll.                     |
| <i>i.</i> ♀ ad. sk.            | Lichtenfels, S. Greenland,<br>June 1.                         | Dr. R. Bowdler<br>Sharpe [P.]. |
| <i>k.</i> ♂ ad. sk.            | Fredericshaab, S. Greenland,<br>June 3 ( <i>P. Müller</i> ).  | Col. H. W. Feilden<br>[P.].    |
| <i>l, m.</i> ♂ ♀ ad. sk.       | Nanortalik, S. Greenland,<br>June, July ( <i>R. Müller</i> ). | Hargitt Coll.                  |
| <i>n.</i> Ad. sk.              | North America, summer.                                        | Salvin-Godman Coll.            |
| <i>o, p.</i> Ad. st. et<br>sk. | North America, summer &<br>winter.                            | Hudson Bay Co.<br>[P.].        |
| <i>q.</i> Ad. sk.              | North America, summer.                                        | Hardwicke Bequest.             |
| <i>r.</i> Ad. sk.              | North America, summer.                                        | Sir John Franklin<br>[P.].     |



|                             |                                                               |                              |
|-----------------------------|---------------------------------------------------------------|------------------------------|
| e. Imm. sk.                 | North America.                                                | Lord Odo Russell<br>[P.]     |
| f. Ad. sk.                  | Canada, summer.                                               | Government of<br>Canada [P.] |
| u. Imm. sk.                 | New Brunswick ( <i>H. E. Dresser</i> ).                       | Salvin-Godman Coll.          |
| v. Imm. sk.                 | Locust Grove, New York,<br>Dec. ( <i>C. H. Merriam</i> ).     | Salvin-Godman Coll.          |
| w. Pull. sk.                | Adirondacks, N. Y., July 16<br>( <i>C. H. M.</i> ).           | Salvin-Godman Coll.          |
| x, y. ♂ ad. et<br>pull. sk. | Big Moose Lake, N. Y., April-<br>July ( <i>C. H. M.</i> ).    | Salvin-Godman Coll.          |
| z-α'. Ad. sk.               | Lake Ontario, spring &<br>summer.                             | C. J. Phelps, Esq.<br>[P.]   |
| β'. ♀ ad. sk.               | New Haven, Connecticut,<br>April 23 ( <i>C. H. M.</i> ).      | Salvin-Godman Coll.          |
| α'. ♂ ad. sk.               | Tarpon Springs, Florida, Jan. 6<br>( <i>W. E. D. Scott</i> ). | Salvin-Godman Coll.          |
| δ'. ♀ imm. sk.              | Corpus Christi, Texas, Nov. 6<br>( <i>F. B. Armstrong</i> ).  | Salvin-Godman Coll.          |
| ε'. Ad. sk.                 | California, summer.                                           | J. H. Gurney, Esq.<br>[P.]   |
| ζ', η'. ♂ ♀ ad. sk.         | Monterey, California, April,<br>June.                         | Mr. Alvin Seale [C.]         |
| θ', ι'. ♂ ♀ ad. sk.         | West side Rocky Mts.,<br>summer.                              | J. K. Lord, Esq. [P.]        |
| κ'. ♂ ad. sk.               | Fort Simpson, summer.                                         | B. R. Ross, Esq.<br>[P.]     |
| l-n'. Ad. et<br>imm. sk.    | Vancouver Island.                                             | Mr. Wood [P.]                |
| o', p'. Skeletons.          |                                                               |                              |
| q'. Imm. skele-<br>ton      | North Europe.                                                 |                              |
| r'. Skull.                  |                                                               |                              |
| s' v'. Sterna.              |                                                               |                              |

4. *Colymbus adamsi*.

*Colymbus hiemalis*, *Wieg.* (*nec Brehm*) *Arch. Naturg.* 1836, p. 200.

*Colymbus glacialis*, *Middendorff* (*nec Linn.*), *Sibir. Reise*, ii. pt. ii. p. 238 (1851); ? *Hengl. J. f. O.* 1872, p. 123 [Novaya Zemlya; Wnigats]

*Colymbus adamsi*, *G. R. Gray*, *P. Z. S.* 1859, p. 167 [Bering Straits]; *Slater*, *P. Z. S.* 1859, p. 206 [Suffolk coast]; *Swinhoe*, *Ibis*, 1861, p. 208 [Amov]; *Coues*, *Pr. Ac. Philad.* 1862, p. 227; *Ross*, *Nat. Hist. Rev.* 1862, p. 289 [Mackenzie R.; Gt. Slave Lake]; *Elliot*, *B. N. Amer.* ii. p. lxiii (1869); *G. R. Gray*, *Hand-l. B.* iii. p. 92 (1871); *Finsch*, *Abh. Nat. Ver. Bremen*, ni. p. 72 (1872); *Swinhoe*, *Ibis*, 1877, p. 146 [Hakodadi]; *Blakist & Pryer*, *Ibis*, 1878, p. 211 [Yezo]; *Seebohm*, *Ibis*, 1879, p. 161 [Yenesay Valley]; *Ridgw. Bull. U. S. Nat. Mus.* xxi. p. 55 (1881); *Tacz. Bull. Soc. Z. Fr.* viii. p. 345 (1883) [Kamschatka]; *Nelson*, *Cruise 'Corwin'*, p. 114 (1883); *Seebohm*, *Ibis*, 1884, p. 32 [Hakodadi]; *Merriam*, *Auk*, ii. p. 63 (1885) [Point Barrow, Alaska: migration]; *Seebohm*, *Hist. Brit. B.* iii. p. 405 (1885); *id.* *Zoologist*, (3) ix. p. 144 (1885); *Saunders*, *Ill. Man. Brit. B.* p. 695 (1889); *Seebohm*, *B. Jap.* p. 362 (1890); *Ridgw. Ibis*, 1890, p. 120; *Pearson & Bidwell*, *Ibis*,

1894, p. 228 [N. Norway]; *Collett, Ibis*, 1894, p. 269, pl. viii. [Norway]; *Dresser, B. Eur. ix. Suppl.* p. 413, pl. 722 (1896); *Sharpe, Handb. B. Gr. Brit.* iv. p. 182, pl. 113 (1897); *Pearson, Ibis*, 1898, p. 204 [Novaya Zemlya].

*Colymbus glacialis*, var. *adamsii*, *Swinhoe, P. Z. S.* 1868, p. 822 [Sea of Ochotsk].

*Colymbus torquatus*, var. *adamsi*, *Coues, Key N. Am. B.* p. 834 (1872); *id. B. N.-West*, p. 720 (1874).

*Urinator adamsi*, *Stejn. P. U.S. Nat. Mus.* v. p. 43 (1882); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 450 (1884); *Stejn. Bull. U.S. Nat. Mus.* xxix. p. 14 (1885) [Commander Is.], p. 313 [Kamschatka]; *A. O. U. Check-l.* p. 75 (1886); *Ridgw. Man. N. Am. B.* p. 7 (1887); *Townsend, Auk*, iv. p. 12 (1887) [N. Alaska]; *Nelson, Rep. N. H. Alaska*, p. 36 (1887); *MacFarl. P. U.S. Nat. Mus.* xiv. p. 416 (1891) [Arctic America].

*Colymbus torquatus adamsi*, *Coues, Key N. Am. B.* 2nd ed. p. 790 (1884).

*Colymbus glacialis adamsi*, *Tschusi, Orn. Jahrb.* v. p. 145 (1894).

*Gavia adamsi*, *Allen, Auk*, xiv. p. 312 (1897).

*Adult in breeding-plumage.* Similar to *C. glacialis*, but at once distinguished by the bill, which is much stouter and of a yellowish or whitish colour, shading into dusky towards the base; the culmen is, moreover, almost perfectly straight from the forehead to the tip, and the angle of the genys is sharply defined, whereas in *C. glacialis* the culmen is distinctly curved downward and the angle of the genys is inconspicuous; the feathers on the throat and upper part of the fore-neck are purplish, like the base of the neck, instead of dark green, and the white edges to the feathers forming the band across the throat are rather wider and longer: otherwise this species is perfectly similar to *C. glacialis*. Tail composed of 18 feathers. Total length about 32 inches, culmen from feathers on forehead 3.4–3.7, wing 14.4–14.9, tail 2.6, tarsus 3.3–3.4, outer toe and claw 4.5–4.9.

*Adult in non-breeding plumage.* Similar to *C. glacialis*, but at once distinguished by the shape and whitish colour of the bill.

The *immature* resembles the adult in non-breeding plumage, but the bill is shorter.

*Hab.* Northern parts of North America and Asia as far west as Novaya Zemlya, ranging south in winter to Japan, and occasionally to Norway and the British Islands.

|                 |                                                                          |                                                |
|-----------------|--------------------------------------------------------------------------|------------------------------------------------|
| a. Ad. sk.      | [North America.]                                                         | Old Coll.                                      |
| b. ♂ ad. sk.    | Fort Simpson, summer.                                                    | B. R. Ross, Esq.<br>[P.]                       |
| c. Ad. head.    | Fort Simpson, summer ( <i>W. Hardisty</i> ).                             | Salvin-Godman Coll.                            |
| d. Ad. sk.      | Arctic coast, east of Fort Anderson, summer ( <i>R. R. Macfarlane</i> ). | Salvin-Godman Coll.                            |
| e. Ad. sk.      | Alaska, summer ( <i>Adams</i> ).                                         | H.M.S. 'Enterprise.'<br>(Type of the species.) |
| f. Ad. sk.      | Kotzebue Sound, summer ( <i>E. W. Nelson</i> ).                          | Salvin-Godman Coll.                            |
| g, h. ♂ ad. sk. | Hakodadi, Feb. 20 ( <i>Henson</i> ).                                     | Seebohm Coll.                                  |
| i. ♀ imm. sk.   | Hakodadi, Jan. 25 ( <i>Henson</i> ).                                     | Tweeddale Coll.                                |

## Family II. PODICIPEDIDÆ\*.

Supraorbital grooves feebly developed or absent; lachrymal free; dorsal vertebræ 1-4 fused; no spina externa or interna; ventral and dorsal lips of coracoid groove strongly developed; metasternum notched, not projecting beyond the level of the free ends of the posterior lateral process; post-ilia meeting in the mid-dorsal line above the neural spines of the synsacrum; tibial bridge tendinous; patella large, vertically elongated (*W. P. Pycraft*). Sterno-tracheal muscles asymmetrical (*H. Gadow*). Ambiens, femoro-caudal, and accessory semitendinosus absent (*A. H. Garrod*). Left carotid only present (*A. H. Garrod*). 12 meta-carpo-digital remiges. Hallux raised above the level of the other toes, which are provided with wide lateral lobes united at the base. Tail vestigial.

### Key to the Genera.

- A. Secondary-quills equal to or not much shorter than the primaries; metatarsus considerably shorter than the middle toe and claw.
- a. Culmen moderately curved downward toward the tip, or nearly straight; feathers of forehead normal . . . . . 1. *PODICIPES*, p. 502.
- b. Culmen strongly curved downward towards the tip; feathers of forehead bristly . . . . . 3. *PODILYMBUS*, [p. 553.]
- B. Secondary-quills short, the longest about equal to the ninth or tenth primary; metatarsus equal to or very little shorter than the middle toe and claw; culmen very long and pointed . . . . . 2. *ÆCHMOPHORUS*, [p. 549.]

### 1. PODICIPES.

|                                                                                                                               | Type.                   |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <i>Colymbus</i> [ <i>Brisson</i> , <i>Orn.</i> vi. p. 33 (1760)]; <i>Illiger</i> , <i>Prodromus</i> , p. 281 (1811) . . . . . | <i>P. cristatus</i> .   |
| <i>Podiceps</i> , <i>Lath. Suppl. Gen. Syn.</i> p. 294 (1787) . . . . .                                                       | <i>P. cristatus</i> .   |
| <i>Dytes</i> , <i>Kaup</i> , <i>Nat. Syst.</i> p. 41 (1829) . . . . .                                                         | <i>P. auritus</i> .     |
| <i>Pedetaithya</i> , <i>Kaup</i> , <i>Nat. Syst.</i> p. 44 (1829) . . . . .                                                   | <i>P. griseigena</i> .  |
| <i>Proctopus</i> , <i>Kaup</i> , <i>Nat. Syst.</i> p. 49 (1829) . . . . .                                                     | <i>P. nigricollis</i> . |
| <i>Lophanthya</i> , <i>Kaup</i> , <i>Nat. Syst.</i> p. 72 (1829) . . . . .                                                    | <i>P. cristatus</i> .   |

\* The following works refer to the anatomy, etc., of the group:—Nitzsch, *Pteryl.*, Engl. ed. p. 152, pl. x fig. 12 (1867); Eyton, *Osteol.* Av. p. 214, pl. 2 L, pl. xl. fig. 1 (1867); Garrod *P. Z. S.* 1873, p. 470 [left carotid only is present in *P. cristatus* and *P. minor*], pp. 629, 642 [muscles], 1875, pp. 343, 348 [plantar tendons], Gulliver, *P. Z. S.* 1875, p. 488 [red blood-corpuscles], Nathusius, *J. f. O.* 1882, p. 298 [egg-shell], Sundevall, *Ibis*, 1886, pp. 400, 425, 457 [wing]; Beddard, *P. Z. S.* 1890, pp. 430-442 [general remarks]; Shufeldt, *J. Anat. Phys.* xxiv pp. 169-187, pls. xi. & xii (1890), xxvi pp. 198-203; Beddard, *Ibis*, 1893, p. 38 [remarks on maxillo-palatine in *P. cornutus*]; id. *P. Z. S.* 1896, pp. 538-547 [anatomy of *Æ. major*], 1897, p. 469 [intercentra in *Æ. major*]; Shufeldt, *Ibis*, 1898, pp. 46-51 [terrestrial attitudes].

|                                                                                                                              |                           |
|------------------------------------------------------------------------------------------------------------------------------|---------------------------|
|                                                                                                                              | Type.                     |
| <i>Dasyptilus</i> , Swains. <i>Class. B.</i> ii. p. 369 (1837) . . . .                                                       | <i>P. poliocephalus</i> . |
| <i>Poliocephalus</i> , Selby, <i>Cat. Gen. &amp; Subgen. Types</i><br><i>Aves</i> , p. 47 (1840) . . . . .                   | <i>P. poliocephalus</i> . |
| <i>Pedeiaithya</i> , G. R. Gray, <i>Gen. B.</i> iii. p. 632 (1846);<br><i>id. Hand-l. B.</i> iii. p. 93 (1871) . . . . .     | <i>P. griseigena</i> .    |
| <i>Lophaethya</i> , Agassiz, <i>Nomen. Zool., Index Univer-</i><br><i>salis</i> , p. 620 (1848) . . . . .                    | <i>P. cristatus</i> .     |
| <i>Tachybaptus</i> , Reichenb. <i>Av. Syst.</i> pl. ii. (1849); <i>id.</i><br><i>Nat. Syst. Vög.</i> p. iii (1852) . . . . . | <i>P. fluviatilis</i> .   |
| <i>Otodytes</i> , Reichenb. <i>Nat. Syst. Vög.</i> p. iii (1852) ..                                                          | <i>P. nigricollis</i> .   |
| <i>Rollandia</i> , Bonap. <i>C. R.</i> xlii. p. 775 (1856) . . . . .                                                         | <i>P. rollandi</i> .      |
| <i>Centropelma</i> , Sclater & Salvin, <i>Exotic Orn.</i> ii. p. 189<br>(1869) . . . . .                                     | <i>P. micropterus</i> .   |
| <i>Colymbetes</i> , Heine in Heine & Reichenow, <i>Nomencl.</i><br><i>Mus. Hein.</i> p. 364 (1890) . . . . .                 | <i>P. poliocephalus</i> . |
| <i>Calipareus</i> , Bonap. 1855; <i>fide Gray, Hand-l.</i> iii.<br>p. 94 (1871) . . . . .                                    | <i>P. calipareus</i> .    |

Culmen short, fairly long, or long, somewhat curved downward toward the tip, straight, or slightly upturned. Feathers on forehead normal. Secondaries equal to, or not much shorter than the primary quills. Metatarsus considerably shorter than the middle toe and claw.

*Range.* Throughout the world.

*Key to the Species in breeding-plumage.*

- I. Size small: culmen from feathers on forehead to tip less than 1 inch; wing less than 5 inches; outer toe and claw not exceeding 2 inches.
  - A. With no long hair-like feathers on the sides of the head or ear-coverts.
    - a. Lower part of throat and fore-neck chestnut.
      - a'. Crown and nape dark brown like the forehead; general colour above brownish black.
        - a''. Primaries ash-brown; outer webs of secondaries ash-brown, inner webs mostly white.
          - a<sup>3</sup>. Chestnut on sides of head not extending to hinder margin of eye, but divided by a wide blackish tract; underparts mostly black . . . . . *fluviatilis*, p. 507.
          - b<sup>3</sup>. Chestnut on sides of head extending to hinder margin of eye.
            - a<sup>4</sup>. Chin, upper part of throat, and feathers below the eye blackish; underparts mostly silvery white. *philippensis*, p. 511.
            - b<sup>4</sup>. Chin blackish, upper part of throat and feathers below the eye deep chestnut, like the rest of the fore-neck; underparts mostly black . . . . . *tricolor*, p. 517.

- b''*. Basal half of inner primaries mostly white; secondaries white, the terminal part of the outer web often margined with ash-brown . . . . . *capensis*, p. 513.  
*b'*. Forehead and fore part of crown black, hind part of crown and nape chestnut; general colour of upper parts white with dark shaft-stripes . . . . . *albescens*, p. 516.  
*b*. Chin and throat as well as the upper part of the fore-neck white; a chestnut patch on each side of the nape . . . . . *polzelni*, p. 518.  
*c*. Chin and throat black, shading into dark smoky brown on the fore-neck; a deep chestnut band down each side of the neck, commencing behind the eye . . . . . *novæ hollandiæ*, [p. 519].  
*d*. Chin and throat black, fore-neck as well as the sides of the head and neck uniform grey . . . . . *dominicus*, p. 520.  
**B**. With long hair-like feathers on each side of the head.  
*e*. Feathers on the head, especially along the sides of the crown, with dark bases and elongate white hair-like tips; ear-coverts not white; breast and underparts silvery white.  
*e'*. Chest washed with pale rufous-buff; inner primaries and secondaries almost pure white . . . . . *poliocephalus*, p. 522.  
*d'*. Chest chestnut; inner primaries and secondaries widely tipped with dark brown . . . . . *rufpectus*, p. 523.  
*f*. Feathers of the sides of the crown elongate, with white base and black tips; ear-coverts pure white; breast and underparts vinaceous rufous . . . . . *americanus*, p. 524.  
**II**. Size somewhat larger: culmen from feathers on forehead to tip 0·6-1·3 inches; wing 4·6-5·9\*; outer toe and claw 2·1-2·6.  
**C**. Breast and belly chestnut, head and neck black; ear-coverts white; long feathers on sides of head white with black tips . . . . . *rollandi*, p. 526.  
**D** Breast and belly silvery white.  
*g*. Fore-neck and chest chestnut; head and conspicuous ruff round neck blackish; a wide rufous-buff band on each side of the crown . . . . . *auritus*, p. 527.  
*h*. Fore-neck black  
*e'*. Elongate feathers on the sides of the crown and ear-coverts chestnut, contrasting with the golden superciliary plumes; inner primaries pure white . . . . . *nigricollis*, p. 532.  
*f'*. Elongate feathers on the sides of the crown and ear-coverts golden straw,

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\* More than 5 inches long except in *P. taczanowskii*.

slightly tinged with rufous, scarcely contrasting with the superciliary plumes; inner primaries ash-brown ..

*californicus*, p. 535.

i. Fore-neck white.

***g'*.** Wing about 5·3 inches; culmen 0·6–0·8; outer toe and claw 2·2.

c''. Forehead and crown pale mouse-brown; elongate plumes on sides of head and ear-coverts golden straw.

*calipareus*, p. 536.

*d'*. Forehead and crown ash; elongate plumes on sides of head and ear-coverts ash with a slight golden tinge . . . . .

*juninensis*, p. 538.

**h'. Wing** about 4.6 inches; culmen 1.15-1.3; outer toe and claw 2.45; forehead and crown dark ash; elongate plumes on head and sides of ear-coverts dark ash . . . . .

*taczanowskii*, p. 538.

III. Size largest: culmen from feathers on forehead to tip 1.4-2.4 inches; wing 4.5-8.3\*; outer toe and claw 2.8-3.2.

E. Humeral feathers dark brown.

**k. Breast and belly dull vinaceous rufous, tipped with silvery; fore-neck white; wing 4·5–4·6 inches.....**

*micropterus*, p. 538.

7. Breast and belly silvery white; fore-neck chestnut.

7. Size smaller: culmen 1.4-1.7 inches; wing 6.3-7.2; outer toe and claw 2.8.

*griseigena*, p. 539.

*k'*. Size larger: culmen 1.7-2.4 inches; wing 7.2-8.3; outer toe and claw 3.2.

*holboelli*, p. 542.

F. Humeral feathers nearly pure white; lesser wing-coverts forming a wide white band along the edge of the wing; a full long occipital crest; upper neck surrounded by a conspicuous hood . . . . .

*cristatus*, p. 544.

*Key to the Species in non-breeding plumage.*

**I. Size small: culmen from feathers on forehead to tip less than 1 inch; wing less than 5; outer toe and claw not exceeding 2.**

**A. Sides of head and ear-coverts whitish, buff or dusky ; never streaked.**

**a. Primaries ash-brown; outer webs of secondaries ash-brown, inner webs mostly white** . . . . .

*Auriatilis*, p. 507.

† *philippensis*, p. 511.

*b.* Basal half or more of the inner primaries white, tips ash-brown; outer secondaries white, the terminal part of the outer web often margined, sometimes widely, with ash-brown. . . . .

*capensis*, p. 513.

*†albescens*, p. 518.

†*pelzelni*, p. 518.

*novæ hollandiæ,*

[p. 519.

\* More than 6 inches long except in *P. micropterus*.

† *P. tricolor* apparently does not assume a non-breeding plumage, the chestnut throat and neck and the black breast being found throughout the year.

† *P. albescens* and *P. pelzelni* have not been examined in non-breeding plumage.

- c. Inner primaries with at least the basal part of the outer web ash-brown; the inner web and tip white; secondaries white, washed with ash-brown on the outer web ..... *dominicus*, p. 520.
- d. Inner primaries and outer secondaries pure white, with generally a very small brown or ash-coloured spot near the tip of the outer web ... .. *poliocephalus*, p. 522.
- e. Inner primaries and outer secondaries white, rather widely tipped on both webs with dark ash-brown, extending further towards the base on the outer web ..... *\*rufpectus*, p. 523.
- B. Sides of head and ear-coverts white with dark brown tips, producing a streaked appearance ..... *americanus*, p. 524.
- II. Size somewhat larger: culmen from feathers on forehead to tip 0·6-1·3; wing 4·6-5·9 †; outer toe and claw 2·1-2·6.
- C. Sides of head and ear-coverts white, with blackish tips, producing a striated appearance ..... *\*rollandi*, p. 526.
- D. Sides of head and ear-coverts golden, buff or dusky, never streaked.
- f. Inner primary quills pure white ..... *nigricollis*, p. 532.
- g. Inner primary quills ash, sometimes narrowly tipped with white.
- a'. Forehead, crown, occiput, and nape uniform brownish black.
- a''. Terminal half of the culmen nearly straight and slightly tilted upward; wing 4·9-5·35 inches ..... *californicus*, p. 535.
- b''. Culmen slightly curved downward toward the tip; wing 5·65-5·9 inches ..... *auritus*, p. 527.
- b'. Forehead and crown mouse-brown or ash, contrasting strongly with the sooty-black occiput and nape.
- c''. Wing 5·2-5·5 inches; culmen 0·6-0·8; outer toe and claw 2·2
- a<sup>3</sup>. Forehead and crown mouse-brown. *calipareus*, p. 536.
- b<sup>3</sup>. Forehead and crown ash ..... *juninensis*, p. 538.
- d''. Wing about 4·6 inches; culmen 1·3-1·5; outer toe and claw 2·45 ..... *taczanowskii*, p. 538.
- III. Size largest: culmen from feathers on forehead to tip 1·4-2·4 inches; wing 4·5-8·3 †; outer toe and claw 2·8-3·2.
- E. Humeral feathers dark brown.
- h. Wing 4·5-4·6 inches: least wing-coverts brown, like the rest of the wing ..... *micropterus*, p. 538.

\* *P. rufpectus* and *P. rollandi* have not been examined in non-breeding plumage.

† More than 5 inches long except in *P. taczanowskii*.

‡ More than 6 inches long except in *P. micropterus*

- i. Wing 6·3–8·3 inches: least wing-coverts white, forming a band along the edge of the wing widest towards its base.
- c'. Size smaller: culmen 1·4–1·7 inches; wing 6·3–7·2; outer toe and claw 2·8 *griseigena*, p. 539.
- d'. Size larger: culmen 1·7–2·4 inches; wing 7·2–8·3; outer toe and claw 3·2. *holboelli*, p. 542.
- F. Humeral feathers nearly pure white; lesser wing-coverts forming a wide white band along the edge of the wing..... *cristatus*, p. 544.

1. *Podiceps fluviatilis*.

La Grebe de rivière ou le Castagneux, *Brisson, Orn. vi. p. 59 (1760)*.

La Grebe de rivière noirastre, *Brisson, Orn. vi. p. 62 (1760)*.

*Colymbus auritus*, *γ, Linn. S. N. i. p. 223 (1766)*.

Little Grebe, *Pennant, Brit. Zool. ii. p. 398 (1768); Lath. Gen. Syn. iii. pt. i. p. 289 (1785); Lath. Gen. Hist. x. p. 29 (1824)*.

*Colymbus fluviatilis*, *Tunstall, Orn. Brit. p. 3 (1771)*.

Le Castagneux, *D'Aubent. Pl. Enl. ix. pl. 49 [no. 905]; Buff. Hist. Nat. Ois. viii. p. 244, pl. xx. (1781)*.

? *Colymbus pyrenaicus*, *Lapeirouse, K. Vet. Akad. Nya Handl. iii. p. 111 (1782)*.

Black-chin Grebe, *Lath. Gen. Syn. iii. pt. i. p. 292 (1785); id. Gen. Hist. x. p. 31 (1824)*.

*Podiceps minutus*, *Lath. Gen. Syn. Suppl. i. p. 294 (1787); Seebohm, Ibis, 1882, p. 369 [Japan]*.

*Podiceps hebridalis*, *Lath. Gen. Syn. Suppl. i. p. 295 (1787)*.

*Colymbus minor*, *Gmel. S. N. i. pt. ii. p. 591 (1788); Bonnat. Tabl. Encycl. Méth. i. p. 57, pl. 46. fig. 5 (1790); Naum. Nat. Vög. Deutschl. ix. p. 785, pl. 247 (1838); Bau, etc. J. f. O. 1877, p. 341 [Germany]*.

*Colymbus hebridicus*, *Gmel. S. N. i. pt. ii. p. 594 (1788); Bonnat. Tabl. Encycl. Méth. i. p. 58 (1790)*.

*Podiceps minor*, *Lath. Ind. Orn. ii. p. 784 (1790); Meyer & Wolf, Taschenb. ii. p. 436 (1810); Temm. Man. d'Orn. p. 471 (1815); Vieill. N. Dict. d'Hist. Nat. xiii. p. 441 (1817); Temm. Man. d'Orn. ed. ii. pt. ii. p. 727 (1820); Steph. in Shaw's Gen. Zool. xiii. pt. i. p. 13, pl. 2 (1826); Werner, Atl. Ois. d'Eur. Ord. 14, pl. 11 (1828); Selby, Brit. Orn. ii. p. 401, pl. lxxv. fig. 2 only (1833); Nilss. Skand. Faun. ii. p. 494 (1835); Gould, B. Eur. v. pl. 392 (1837); Korner, Skand. Fogl. p. 22, pl. 60. fig. 6 (1839–46); Schinz, Europ. Faun. i. p. 355 (1840); Keys. u. Blas. Wirbelth. p. 234 (1840); Benoit. Orn. Sicil. p. 172 (1840); Demid. Voy. Russ. Mérid. iii. p. 305 (1840); Cara, Orn. Sard. p. 166 (1842); Bouteille, Orn. Dauphiné, ii. p. 229, pl. 59. fig. 5 (1843); Mühle, Beitr. Orn. Griechenl. p. 134 (1844); G. R. Gray, List of B. pt. iii. p. 151 (1844) [nec spec. i-m]; id. Gen. B. iii. p. 633 (1846); Degl. Orn. Europ. ii. p. 507 (1849); Reichenb. Natatores, pl. 11. nos. 79–85 (1850); Thomps. Nat. Hist. Irel. iii. p. 190 (1851); Kjaerboll. Danm. Fugle, p. 403, pl. xxxix. (1852); Watters, N. Hist. B. Irel. p. 221 (1853); Sundev. Svensk. Fogl. pl. 54. fig. 7 (1856); Jaubert & Laponm. Rich. Orn. p. 498 (1859); Salrin, Ibis, 1859, p. 364 [Zana]; Tristram, Ibis, 1860, p. 82 [N. Sahara], p. 159 [Lake Halloula]; Powys, Ibis, 1860, p. 349 [Epirus]; Gould, B. Gr. Brit. v. pl. 42 (1862); Tristram, P. Z. S. 1864, p. 454 [Palestine]; Wright, Ibis, 1864, p. 157 [Malta]; More, Ibis, 1865, p. 448 [Gt. Britain]; Schl. Mus. Pays-*



- Bas*, vi. *Urinat.* p. 48 (1867) [part]; *Smith, Ibis*, 1868, p. 457 [Portugal]; *Collett, Vid. Selsk. Forh. (Christ.* 1868, p. 190; *Droste, J. f. O.* 1869, p. 349 [Faroes]; *Elwes & Buckl. Ibis*, 1870, p. 341 [Turkey]; *Fritsch, Nat. Vög. Europa's*, p. 505 (1870), *Art.* pl. 61. figs 12, 13 (1871); *Goebel, J. f. O.* 1871, p. 151 [S. Russia]; *R. Gray, B. West. Scott.* p. 409 (1871); *G. R. Gray, Hand-l. B.* iii. p. 94 (1871); *Fritsch, J. f. O.* 1872, p. 378 [Bohemia]; *Severtz Turkestan. Jecotnie*, p. 69 (1873); *id. J. f. O.* 1873, p. 340 [Tian-shan], 1875, p. 186; *Brooke, Ibis*, 1873, p. 349 [Sardinia]; *Irby, Orn. Gibraltar*, p. 221 (1875); *Danf. & Brown, Ibis*, 1875, p. 434 [Transylvania]; *Palmén, J. f. O.* 1876, p. 65 [Finland]; *Jesse, Ibis*, 1876, p. 383 [Corsica]; *Dresser, Ibis*, 1876, p. 413; *Liebe, J. f. O.* 1878, p. 85 [E. Hungary]; *Rudolf, J. f. O.* 1879, p. 83 [Don]; *Seebohm, Ibis*, 1882, p. 232 [Astrakan], 1883, p. 36 [Caucasus]; *Radde, Orn. Caucas.* p. 401 (1884); *Lutken, Ornis*, 1885, p. 143 [Denmark]; *Seebohm, Hist. Brit. B.* iii. p. 468 (1885); *Dalla-Torre & Tschusi, Ornis*, 1885, p. 556 [Austro-Hungary], 1887, p. 346, 1888, p. 350, & *Suppl.* p. 331, 1890, p. 262; *Booth, Rough Notes*, iii. pt. x. (1886); *Tschusi, Ornis*, 1886, p. 174 [local names]; *Meyer & Helm, Zeit. ges. Orn.* iv. p. 398 (1887); *Railde & Walter, Ornis*, 1889, p. 128 [Transcaaspia]; *Seebohm, B. Jap.* p. 367 (1890); *Evans, Ibis*, 1891, p. 83 [Incubation lasts 20-24 days]; *Lilford, Col. Fig. Brit. B.* pt. xx. (1891); *Gatke, Heligoland*, Engl. ed. p. 587 (1895).
- Podiceps hebridicus*, *Lath. Ind. Orn.* ii. p. 785 (1790).
- Colymbus erythrocephalus*, *Hermann, Observ. Zool.* i. p. 151 (1804).
- Colymbus (sic) minutus*, *Poll. Zoogr. Rosso-As.* ii. p. 358 (1811).
- Podiceps pygmaeus*, *Brehm, Handb. Vog. Deutschl.* p. 966 (1831).
- Little Grebe or Dabchick, *Nutt Man. Orn.* p. 257 (1834) [Hudson's Bay]; *Yarrell, Hist. Brit. B.* iii. p. 316 (1843).
- Sylheocyclus europæus*, *Mangill Man. Brit. Orn.* i. p. 205 (1842) & 2. d. ed. ii. p. 207 (1846); *id. Hist. B. v.* p. 276 (1852).
- Podiceps pallidus*, *Brehm, Vogelfang*, p. 403 (1855).
- Podiceps fluviatilis*, *Degl. & Gerbe, Orn. Europ.* ii. p. 587 (1867); *Dresser, B. Europe*, viii. p. 659, pl. 633 (1880); *Tristr. Surv. W. Palest.* p. 130 (1884); *Saunders, ed. Yarrell, Brit. B.* iv. p. 137 (1885); *Oigl. Avif. Ital.* p. 455 (1886); *Tutt, Ibis*, 1887, p. 400 [Portugal]; *Oigl. Avif. Ital.* i. p. 669 (1889), ii. p. 659 (1890), iii. p. 515 (1891); *Hartert, Ibis*, 1892, p. 521 [E. Prussia]; *Reiser, Orn. Balcanica*, ii. p. 204 (1894), iv. p. 148 (1896).
- Podiceps philippensis*, *Swinhoe (nec Bonnat.)*, *Ibis*, 1875, p. 456 [S. Yezo]; *Blakist & Dryer, Ibis*, 1878, p. 211 [Japan].
- Sylheocyclus minor*, *Tacz. Bull. Soc. Z. Fr.* ii. p. 103 (1877) [Poland].
- Tachybaptus fluviatilis*, *Whitehead, Ibis*, 1885, p. 46 [Corsica]; *Reid, Ibis*, 1885, p. 255 [Morocco]; *Salvad. Ucc. Ital.* p. 302 (1887); *Guillem. Ibis*, 1889, p. 214 [Cyprus].
- Podicipes fluviatilis*, *Saunders, Ill. Man. Brit. B.* p. 709 (1889); *Newton, Ibis*, 1889, p. 577 [habits of nestling]; *Sharpe, Handb. B. Gr. Brit.* iv. p. 207 (1897).
- Podiceps nigricans*, *Stejn. P. U.S. Nat. Mus.* xv. p. 290 (1892).

*Adult in breeding-plumage.* Forehead, lores, crown, and hind-neck dark brown with a dull oil-green gloss; cheeks, chin, and throat sooty-black with a slight gloss; sides of head and rest of neck rich chestnut; upper parts brownish black with some gloss; sides of lower back and rump mostly pale chestnut or chestnut-buff; chest brownish black; rest of underparts similar, but more or less

mixed with silvery white, especially towards the middle of the body; primaries brown; outermost secondaries<sup>2</sup> brown, white on the basal two-thirds of the inner web; median and inner secondaries with the inner web and tip and often (in old birds?) the basal part of the outer web white; under wing-coverts pure white; tuft of hairy feathers forming the vestigial tail mostly black. Iris reddish brown; upper and lower mandible blackish, pale horn at the tip; naked skin round the gape and at the base of the lower mandible yellow, in front of the eye blackish; feet slate-grey; outer side of metatarsus and soles blackish. Total length about 9·5 inches, culmen from feathers on forehead 0·65–0·8, wing 3·7–4, tarsus 1·3–1·4, outer toe and claw 1·8–1·9.

*Adult in non-breeding plumage.* Forehead, crown, back of the neck, and upper parts dark brown, very slightly glossed; cheeks, sides of the head and neck, base of fore-neck and chest dull brownish buff, rather darker below the eye and on the ear-coverts; chin and throat pure white; rest of underparts silvery white, shading into brownish buff on the sides and flanks, and dark smoky-grey on the lower belly; plumage otherwise similar to the adult in breeding-plumage. Basal half of the cutting-edge of the upper mandible and greater part of the lower mandible yellowish.

*Nestling in down.* General colour black; breast and belly pure white; forehead shining silvery grey; the head, neck, and back with longitudinal stripes of pale rufous, inclining to whitish behind the eye and on the throat.

As the bird becomes older the down on the head and neck becomes beautifully patterned with brownish-black and silvery-white markings and stripes, and at the same time the upper parts change to dark brown with longitudinal stripes of dull rufous white.

A half-grown bird obtained on the 25th of September resembles the adult in winter plumage, but the black-and-white pattern on the cheeks and sides of the head are still conspicuous; these markings, however, gradually disappear, and by the month of January the young bird is not to be distinguished from its parent in winter plumage; the bill being equally developed and the plumage absolutely similar.

In most immature birds the brown on the outer webs of the inner secondaries extends beyond the shaft on to the inner web.

In the beginning of February the bill becomes black like that of the bird in summer plumage; at the same time the chestnut feathers on the sides of the head and neck begin to make their appearance, while apparently simultaneously some of the white winter feathers of the throat become tinged with pale chestnut.

By April the summer plumage of the head and neck is nearly complete, though a certain number of pale feathers are still intermixed with the plumage of the throat, sides of the head and neck. At this period the black feathers of the chest and underparts begin to make their appearance. These are mostly the result of moult, and are complete by the beginning of May, when the bird has assumed the full breeding-plumage.

Japanese birds in full breeding-plumage are practically similar to European examples. It is true they have rather less black on the throat and behind the eye, and that the underparts are somewhat more mixed with white; but these differences are very slight—merely a matter of degree.

Chinese, Formosan, and Philippine examples have the black on the throat still more reduced, the chestnut on the sides of the head extending to the eye, and the underparts still more mixed with white. I regard these as a fairly distinct subspecies.

From Morocco, Fogaras in S.E. Hungary, and Albistan in Asia Minor, as well as from the Tigris and Euphrates, the Museum possesses examples intermediate between the typical European and the Afro-Indian forms, the white on the secondaries being much developed. From Tenasserim, Lower Burma, and Luzon there are intermediate examples between the Chinese and Afro-Indian forms.

*Hab.* Central and Southern Europe, ranging westward into Central Asia; Japan.

|                             |                                                         |                             |
|-----------------------------|---------------------------------------------------------|-----------------------------|
| a, b. ♀ ad. sk.             | Loch na Shanish, near Inverness, June ( <i>E. H.</i> ). | Hargitt Coll.               |
| c-e. ♂ ad. et pull. st.     | Great Britain.                                          | J. Gould, Esq. [P.].        |
| f. ♀ imm. sk.               | Alnwick, Northumberland, Jan.                           | W. E. de Winton, Esq. [P.]. |
| g. ♂ ad. sk.                | Norfolk, Nov. ( <i>Gunn</i> ).                          | J. H. Gurney, Esq. [P.].    |
| h. ♂ ad. sk.                | Norwich, Oct.                                           | J. H. Gurney, Esq. [P.].    |
| i, k. ♂ ♀ ad. st.           | Merton, May.                                            | Lord Walsingham [P.].       |
| l. ♂ imm. sk.               | Gt. Yarmouth, Nov. 21 ( <i>G. Smith</i> )               | Seeborn Coll.               |
| m, n. Ad. st.               | Leicestershire.                                         | Theodore Walker, Esq. [P.]. |
| o. ♂ imm. sk.               | Walberswick, Suffolk, Nov. 21 ( <i>Tyler</i> ).         | Seeborn Coll.               |
| p. ♀ ad. sk.                | Bushey, Hertfordshire, summer.                          | Purchased.                  |
| q u. Ad., juv. et pull. sk. | Thames Valley, April 26.                                | Gould Coll.                 |
| v. Ad. sk.                  | Chelsea.                                                | Montagu Coll.               |
| w, x. ♂ ad. sk.             | Cookham, Berks, Oct. 10 ( <i>W. Briggs</i> ).           | Tweeddale Coll.             |
| y, z. ♂ ♀ ad. sk.           | Cookham, Aug. ( <i>W. Briggs</i> ).                     | Hume Coll.                  |
| a'. ♂ ad. sk.               | Marlow, July 21.                                        | Gould Coll.                 |
| b'-d'. Ad et juv. sk.       | Romney Marsh, Sept.-Dec.                                | Dr R. Bowdler Sharpe [P.].  |
| e'. ♀ ad. sk.               | Worthing, Sussex, Dec. 2 ( <i>E. H.</i> )               | Hargitt Coll.               |
| f'. Ad. st.                 | Avington, Hants, May.                                   | E. Shelley, Esq. [P.].      |
| g' p'. ♂ ♀ ad. et imm. sk.  | Avington, Feb., May, Dec.                               | Dr R. Bowdler Sharpe [P.].  |
| q' Ad. sk.                  | Devonshire.                                             | Montagu Coll.               |
| r. Ad. st.                  | River Dart, Devonshire.                                 | C. Coningham, Esq. [P.].    |
| s' Ad. sk                   | Havre, France, Oct. ( <i>V. Pluche</i> ).               | Seeborn Coll.               |

|                                        |                                                         |                                 |
|----------------------------------------|---------------------------------------------------------|---------------------------------|
| <i>t'</i> . ♂ ad. sk.                  | Arcachon, S. France ( <i>E. V. Seebohm</i> ).           | Seebohm Coll.                   |
| <i>u'</i> . Ad. sk.                    | Morocco.                                                | Tweeddale Coll.                 |
| <i>v'</i> . ♀ ad. sk.                  | Tuscany, Italy, Oct.                                    | Seebohm Coll.                   |
| <i>w'</i> . Ad. sk.                    | Carlsruhe, Germany, Dec. ( <i>R. G. W. R.</i> ).        | Tweeddale Coll.                 |
| <i>x'</i> . ♂ ad. sk.                  | Münden, Hanover, April 1.                               | E. Hartert, Esq. [P.].          |
| <i>y', z'</i> . Ad. et imm. sk.        | Nr. Vienna, Austria.                                    | Dr. R. Bowdler Sharpe [P.].     |
| <i>a'', b''</i> . ♀ imm. et juv. sk.*  | Fogaras, Hungary, Sept., Oct.                           | Hungarian National Museum [E.]. |
| <i>c''</i> . ♂ ad. sk.                 | Lake Huheh, Palestine.                                  | Canon H. B. Tristram [P.].      |
| <i>d'', e''</i> . ♂ ♀ ad. sk.*         | Albistan, Asia Minor, March 7 ( <i>C. G. Danford</i> ). | Seebohm Coll.                   |
| <i>f'', g''</i> . ♂ ♀ ad. sk.*         | River Tigris ( <i>Commander Jones</i> ).                | India Museum [P.].              |
| <i>h''-k''</i> . ♂ ♀ ad. sk.*          | Valley of the Euphrates ( <i>Jones</i> ).               | India Museum [P.].              |
| <i>l'</i> . Ad. sk.                    | Japan.                                                  | Gould Coll.                     |
| <i>m''</i> . Ad. sk.                   | Yezo ( <i>T. Blakiston</i> ).                           | Tweeddale Coll.                 |
| <i>n''</i> . Juv. sk.                  | S. Yezo, Sept. ( <i>T. B.</i> ).                        | Seebohm Coll.                   |
| <i>o''-x''</i> . Ad., imm. et juv. sk. | Yokohama ( <i>H. Pryer</i> ).                           | Seebohm Coll.                   |
| <i>y''</i> . Ad. sk.                   | Yokohama ( <i>H. Jones</i> ).                           | Seebohm Coll.                   |
| <i>z''</i> . Ad. sk.                   | Shimosa, Jan.                                           | Capt. T. Blakiston [P.].        |
| <i>a³, b³</i> . ♂ ♀ ad. sk.            | Nagasaki, Dec.                                          | F. Ringer, Esq. [P.].           |
| <i>c³</i> . ♂ ad. sk.                  | Usuki, Nov. 15.                                         | Seebohm Coll.                   |
| <i>d³</i> . Skeleton.                  | Great Britain.                                          | Zool. Soc. Coll.                |
| <i>e³, f³</i> . ♂ ♀ skeletons.         | Tring, Hertfordshire, May.                              | Hon. Walter Rothschild [P.].    |
| <i>g³-k³</i> . Sterna.                 |                                                         |                                 |

Subsp. *a. Podicipes philippensis*.

- Castagneux des Philippines, *D'Aubent. Pl. Enl.* ix. pl. 50 [no. 945]; *Buff. Hist. Nat. Ois.* viii. p. 246 (1781).  
 Little Grebe, var. A, *Lath. Gen. Syn.* iii. pt. i. p. 290 (1785).  
 Colymbus minor, β, *Gmel. S. N.* i. pt. ii. p. 591 (1788).  
 Podiceps minor, var. β, *Lath. Ind. Orn.* ii. p. 784 (1790); *Vieill. N. Dict. d'Hist. Nat.* xiii. p. 445 (1817).  
 Colymbus philippensis, *Bonnat. Tabl. Encycl. Méth.* i. p. 58, pl. 46. fig. 3 (1790).  
 Colymbus philippinus, *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 312, *Ois.* xvi. p. 162 (1799).  
 Podiceps philippensis, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 16 (1826) [part; Philippines]; *G. R. Gray, Gen. B.* iii. p. 633 (1846); *Blyth & Wald. Cat. Mamm. & B. Burm.* p. 166 (1849) [Arrakan; Tounghu]; *Swinhoe, Ibis*, 1860, p. 67 [China], 1870, p. 366 [Hainan]; *Walden, Tr. Z. S.* ix. p. 245 (1875) [Luzon]; *David & Oustal. Ois. Chine*, p. 512 (1877); *Slater, Ibis*, 1882, p. 436 [Yangtse-kiang].  
 Podiceps noctivagus, *Temm. Tabl. Méth. Pl. Col.* i. p. 100 (1839).

\* An immature female from Fogaras, Hungary, a female from Albistan, and two examples from the Tigris and Euphrates have the white on the secondary-quills much developed; and are intermediate between the European and Afro-Indian birds. These are probably hybrids.

*Podiceps minor*, *Swinhoe* (*nec Gmel.*), *P. Z. S.* 1863, p. 322 [China; Formosa]; *id. Ibis*, 1863, p. 433, 1865, p. 541 [Formosa]; *id. P. Z. S.* 1871, p. 415 [Hainan]; *Styan, Ibis*, 1891, pp. 331, 510 [Lower Yangtse].

*Tachybaptus fluviatilis*, *La Touche* (*nec Temst.*), *Ibis*, 1892, p. 503 [Foochow & Swatow].

*Tachybaptus philippinensis*, *Grant, Ibis*, 1895, p. 472 [N. Luzon].

*Adult in breeding-plumage.* Differs from *P. fluviatilis* in having the rufous of the face continued right up to the eye and over the greater part of the throat, leaving only the chin and a small portion of the upper throat blackish; breast and abdomen mostly silvery-white and but slightly mottled with blackish; the inner secondaries with the inner web and tip white and the rest of the outer web brown. Iris straw-yellow; bill black, whitish at the tip; naked skin at the base of the bill and between the rami of the mandible pale greenish yellow; legs blackish grey, with a slight tinge of green (*R. Swinhoe*).

*Adult in winter plumage.* Is similar to *P. fluviatilis*, but differs in the greater amount of white in the primaries.

*Hab.* South China, ranging south to Burma, Formosa, Philippine Islands, Hainan, and Borneo.

|                        |                                                           |                                           |
|------------------------|-----------------------------------------------------------|-------------------------------------------|
| a. Imm. sk.            | Burma ( <i>Haughton</i> ).                                | Tweeddale Coll.                           |
| b. ♂ ad. sk.*          | Toungbu, July 8 ( <i>R. G. Wardlaw Ramsay</i> ).          | Tweeddale Coll.                           |
| c, d. ♂ ♀ ad. sk.*     | Lower Pegu, May.                                          | E. W. Oates, Esq [C.].                    |
| e, f. ♀ ad. sk.*       | Thamby, Thatone, Nov., Dec. ( <i>W. Davison</i> ).        | Hume Coll.                                |
| g. Ad. sk.             | Hainan, Feb ( <i>R. Swinhoe</i> ).                        | Seebohm Coll.                             |
| h-l. Ad. et imm sk.    | Amoy, China, Jan., Nov ( <i>R. S.</i> )                   | Seebohm Coll.                             |
| m. Ad. sk.             | Canton                                                    | Tweeddale Coll.                           |
| n. ♀ ad. sk.           | Yangtse River, Feb.                                       | Capt T. Blakiston [P.].                   |
| o. Ad. sk.             | Pa-chow, Ichang, Dec.                                     | E. A. Pratt, Esq [C.]                     |
| p. Ad. sk.             | Hankow, autumn ( <i>R. S.</i> ).                          | Seebohm Coll.                             |
| q. Ad. sk.             | Hankow, autumn ( <i>R. S.</i> )                           | Tweeddale Coll.                           |
| r, s. ♀ ad. et imm sk. | Kiukiang, April, Oct.                                     | F. W. Styan, Esq [P.].                    |
| t. Ad. sk.             | Kiu-kiang, Oct. ( <i>F. W. Styan</i> ).                   | Seebohm Coll.                             |
| u. ♂ ad. sk.           | Ningpo Lake.                                              | Gould Coll.                               |
| v. ♀ ad. sk.           | Chekiang ( <i>R. S.</i> ).                                | Tweeddale Coll.                           |
| w. Ad. sk.             | Formosa.                                                  | F. W. Styan, Esq. [P.].                   |
| x. Ad. sk.             | Formosa, summer ( <i>R. S.</i> ).                         | Seebohm Coll.                             |
| y. Ad. sk.             | S. W. Formosa ( <i>R. S.</i> ).                           | Seebohm Coll.                             |
| z, a'. Juv. sk.        | Mt. Data, Lapanto, N. W. Luzon, Jan. 13 ( <i>J. W.</i> ). | Subscribers to the Whitehead Exped. [P.]. |
| b', c'. Ad. sk.*       | Laguna de Bai, Luzon ( <i>Maitland Heriot</i> ).          | Tweeddale Coll.                           |

\* An adult male from Toungbu, two adult females in breeding-plumage from Lower Pegu and Thatone respectively, and an adult in full breeding-plumage from Luzon, have the white on the secondary-quills much developed. These are apparently hybrids between the Indian and Chinese forms.

|                                       |                                     |                              |
|---------------------------------------|-------------------------------------|------------------------------|
| <i>d'</i> . ♀ ad. sk.                 | Laguna de Bai, Jan. 18.             | A. H. Everett, Esq.<br>[C.]. |
| <i>e'-h'</i> . ♂ ♀ ad. sk.            | Laguna de Bai.                      | Steere Coll.                 |
| <i>i'-l'</i> . ♂ ad.; ♂ ♀<br>juv. sk. | Guimaras, Jan. ( <i>J. B. S.</i> ). | Steere Coll.                 |
| <i>m'</i> . Imm. sk.                  | Labuan, N. Borneo, Dec.             | A. H. Everett, Esq.<br>[C.]. |

2. *Podiceps capensis*. (Plates VII. & VIII.\*)

Indian Grebe, *Lath. Gen. Hist.* x. p. 29 (1824).

*Podiceps philippensis*, *Sykes (nec Bonnat.)*, *P. Z. S.* 1832, p. 170 [Deccan]; *G. R. Gray, Cat. Hodys.* ed. i. p. 147 (1846); *Sunder. Ann. Mag. N. H.* xix. p. 232 (1847) [Calcutta]; *Layard, Ann. Mag. N. H.* (2) xiv. p. 270 (1854); *Adams, P. Z. S.* 1858, p. 510 [Cashmere & Punjab]; *Irby, Ibis*, 1861, p. 251 [Oudh & Kumaon]; *Jerd. B. Ind.* iii. p. 822 (1864); *Beavan, Ibis*, 1868, p. 403 [N.W. India]; *G. R. Gray, Hand-l. B.* iii. p. 94 (1871); *Holdsw. P. Z. S.* 1872, p. 480 [Ceylon]; *Legge, Ibis*, 1874, p. 407 [S. Ceylon]; *Anders. B. W. Yunnan*, p. 702 (1878); *Biddulph, Ibis*, 1881, p. 101 [Gilgit].  
*Podiceps minor*, var. *pandubia*, *Hodys. in Gray's Zool. Misc.* p. 86 (1844); *id. Icon. ined.* no. 558.

*Podiceps minor*, *Rüpp. (nec Gmel.) Vög. N.O.-Afr.* p. 138 (1845) [Coast of Abyssinia]; *Heugl. Vög. N.O.-Afr.* p. 68 (1856); *Hartl. Syst. Orn. W.-Afr.* p. 249 (1857); *Heugl. Ibis*, 1859, p. 348 [Suez]; *id. in Peterm. Geogr. Mitth.* 1861, p. 28 [Abyssinian coast; Suez]; p. 311 [Lake Jamieh, Egypt]; *Hartl. Orn. Madagasc.* p. 83 (1861); *Gurney, Ibis*, 1862, p. 153 [Natal]; *Ferr. in Maillard, Notes Réunion*, Annexe A, p. 4 (1862); *Monteiro, P. Z. S.* 1865, p. 90 [Angola]; *Ayres, Ibis*, 1869, p. 303 [Transvaal]; *Layard, B. S. Afr.* p. 374 (1867); *Finsch & Hartl. Vög. Ost-Afr.* p. 811 (1870); *Blanf. Zool. Abyss.* p. 440 (1870) [Lake Ashangi]; *Shelley, B. Egypt.* p. 314 (1872); *Gurney, ed. Anderss. B. Damaral.* p. 347 (1872); *Shelley & Buckl. Ibis*, 1872, p. 293 [Accra]; *Hume, Nests & Eggs Ind. B.* p. 646 (1873); *Henders. & Hume, Lahore to Yark.* p. 298 (1873) [Cashmere]; *Heugl. Orn. N.O.-Afr.* iv. p. 1363 (1873); *Barratt, Ibis*, 1876, p. 214 [Potchefstroom]; *Butler, Cat. B. Sind*, p. 77 (1879); *Ayres, Ibis*, 1880, p. 271 [Transvaal]; *Bocage, Orn. Angola*, p. 529 (1881); *Sharpe in Oates' Matabeleland*, p. 328 (1881); *Shelley, P. Z. S.* 1881, p. 602 [Pangani]; *Holub & Pelz. Beitr. Orn. S.-Afr.* p. 331 (1882); *Sharpe's ed. Layard, B. S. Afr.* p. 787 (1884); *Swinh. & Barnes, Ibis*, 1885, p. 138 [Central India]; *Ayres, Ibis*, 1885, p. 351 [Transvaal]; *Menzier, Ibis*, 1885, p. 358 [Tarim R.]; *Sharpe, Ibis*, 1886, p. 493 [Fao].

*Podiceps capensis*, *Licht. Nomencl.* p. 104 (1854) [South Africa]; *G. R. Gray, Hand-l. B.* iii. p. 94 (1871); *Salrad. Ann. Mus. Civ. Genov.* (2) i. p. 252 (1884) [Shoa]; *Shelley, Ibis*, 1888, p. 307 [Lake Jipi]; *Salrad. Mem. Accad. Torino*, (2) xlv. p. 564 (1894); *Shelley, Ibis*, 1896, p. 241 [Lake Shirwa].

*Tachybaptus capensis*, *Bonap. C. R.* xlii. p. 775 (1856), xliii. p. 646 (1856).

*Colymbus minor*, *Fisch. & Reichenow, J. f. O.* 1878, p. 247 [Zanzibar]; *Reichenow, J. f. O.* 1889, p. 264 [East Africa].

\* The Plates VII. & VIII., which were prepared some years ago for Dr. Sharpe, respectively bear the names *Tachybaptus capensis* and *T. albigularis*.

- Podiceps fluviatilis*, *Legge* (nec *Tunst.*), *B. Ceylon*, iii. p. 1059 (1860); *Scully*, *Ibis*, 1881, p. 593 [Gilgit]; *Swinh. Ibis*, 1882, p. 125 [Candahar].
- Tachybaptus fluviatilis*, *Oates*, *B. Burmah*, ii. p. 441 (1883); *id. ed. Hume's Nests & Eggs*, iii. p. 401 (1890); *Shelley*, *Ibis*, 1894, p. 478 [Lake Shirwa].
- Podiceps fluviatilis capensis*, *Shelley*, *Ibis*, 1885, p. 418 [Somaliland].
- Tachybaptus minor*, *St. John* (nec *Gmel.*), *Ibis*, 1889, p. 180 [S. Afghanistan & Kelât].
- Colymbus fluviatilis*, *Rewchenow*, *J. f. O.* 1890, p. 107 [Cameroons]; *id. Vog. Deutsch-O.-Afr.* p. 17 (1894).
- Podiceps minor*, *Sharpe*, *Second York. Miss., Aves*, p. 148 (1891); *Jesse*, *Ibis*, 1897, p. 562 [Lucknow].
- Tachybaptus capensis*, *Sharpe*, *Bull. B. O. C.* xx. p. iv (1894); *id. Ibis*, 1895, p. 139; *id. P. Z. S.* 1895, p. 515 [W. Somaliland].
- Tachybaptus albipennis*, *Sharpe*, *Bull. B. O. C.* xx. p. iv (1894); *id. Ibis*, 1895, p. 139 [Peninsula of India].
- Podicipes capensis*, *Sharpe*, *Ibis*, 1897, p. 517 [Zululand].
- Podicipes albipennis*, *Blunf. Faun. Brit. Ind.* iv. p. 475 (1898).

*Adult in breeding-plumage.* Differs from *P. minor* in having the basal portion of the primaries and almost the entire webs of the secondary quills white with white shafts. In most examples there is a more or less distinct brown band on the subterminal margin of the outer web, but in some (the most adult?) most of the secondary quills are entirely white. The rufous on the sides of the head extends to beneath the eye, and the black is confined to the fore part of the cheeks, chin, and upper part of throat; the breast and belly are shining white, more or less mixed with blackish. Iris yellowish hazel, deep raw sienna or amber; upper mandible dusky black, base and lower mandible orange; legs and feet black (*P. Oates*).

*Adult in non-breeding plumage.* Similar to *P. minor*, but at once distinguished by the amount of white on the basal part of the primaries and on the secondaries.

*Hab.* Madagascar and Africa; across South-western Asia to India, Burma, and Ceylon.

|                 |                                                                        |                             |
|-----------------|------------------------------------------------------------------------|-----------------------------|
| a. Imn. sk.     | Fantee, W. Africa ( <i>Ussher</i> ).                                   | Shelley Coll.               |
| b. Ad. sk.      | Accra, May ( <i>J. Smith</i> ).                                        | Shelley Coll.               |
| c. Ad. sk.      | Benguela.                                                              | J. J. Monteiro, Esq. [C.].  |
| d. ♂ ad. sk.    | Lake Tchitina, Upp. River Quillon, Congo, Sept. 3 ( <i>Dr. Lucan</i> ) | Shelley Coll.               |
| e. Ad. sk.      | S. Africa.                                                             | J. Roocke, Esq. [P.].       |
| f. Ad. sk.      | S. Africa ( <i>Capt. Spiller</i> ).                                    | Gould Coll.                 |
| g. Ad. sk.      | S. Africa.                                                             | Sir A. Smith [P.].          |
| h, i. Ad. sk.   | Kingwilliamstown.                                                      | Lieut. Anstey [P.].         |
| k m ♂ ♀ ad. sk. | Natal ( <i>T. Ayres</i> ).                                             | Tweeddale Coll.             |
| n. Ad. sk.      | Natal.                                                                 | J. H. Gurney, Esq. [P.].    |
| o. Ad. sk.      | Pretoria, Transvaal ( <i>Pratt</i> ).                                  | Dr. R. Bowdler Sharpe [P.]. |

|                              |                                                           |                                     |
|------------------------------|-----------------------------------------------------------|-------------------------------------|
| p. ♀ ad. sk.                 | Potchefstroom.                                            | F. A. Barratt, Esq.<br>[P.]         |
| q, r. ♂ ♀ ad. et<br>imm. sk. | Potchefstroom, July, Aug.<br>( <i>T. Ayres</i> ).         | J. H. Gurney, Esq.<br>[P.]          |
| s. ♀ ad. sk.                 | Tamasancha, Matabeleland,<br>Dec. 10 ( <i>F. Oates</i> ). | W. E. & C. G. Oates,<br>Esqrs. [P.] |
| t. Juv. sk.                  | Tchahana Vley, May ( <i>F. O.</i> ).                      | W. E. & C. G. Oates,<br>Esqrs. [P.] |
| u. Ad. sk.                   | Nyasaland.                                                | Alfred Sharpe, Esq.<br>[P.]         |
| v-b'. ♂ ♀ ad. et<br>juv. sk. | Lake Shirwa, Nyasaland,<br>May ( <i>A. Whyte</i> ).       | Sir H. H. Johnston<br>[P.]          |
| c'. Ad. sk.                  | Madagascar.                                               | Sir A. Smith [P.]                   |
| d, e'. Ad. sk.               | Central Madagascar.                                       | Seeborn Coll.                       |
| f'. Ad. sk.                  | Betsileo.                                                 | Rev. J. Shaw [C.]                   |
| g'. ♂ ad. sk.                | Anjouan I., Comoro Group.                                 | Purchased.                          |
| h'. Ad. sk.                  | Pangani River ( <i>Sir J.<br/>Kirk</i> ).                 | Shelley Coll.                       |
| i'. Imm. sk.                 | Zanzibar ( <i>E. C. Burton</i> ).                         | Shelley Coll.                       |
| j, k'. ♂ ad. sk.             | Machakos, Brit. E. Africa,<br>May, Sept.                  | Dr. S. L. Hinde [P.]                |
| l. ♀ ad. sk.                 | Lamu, Sept. 26.                                           | F. J. Jackson, Esq.<br>[P.]         |
| m'. Ad. sk.                  | Somali-land.                                              | E. Lort Phillips, Esq.<br>[C.]      |
| n'. ♂ imm. sk.               | Gedais Wells, Somali-<br>land, March 11.                  | E. Lort Phillips, Esq.<br>[C.]      |
| o-u'. ♂ ♀ ad. sk.            | Angolala, Shoa, May ( <i>Sir<br/>W. C. Harris</i> ).      | India Museum [P.]                   |
| v'. ♂ ad. sk.                | Senafé, Abyssinia, April 13<br>( <i>W. Jesse</i> ).       | Tweeddale Coll.                     |
| w'. ♀ ad. sk.                | Lake Ashangi, Abyssinia,<br>8000 feet, May 1.             | W. T. Blanford, Esq.<br>[C.]        |
| x, y'. Ad. sk.               | Fao, Persian Gulf, April 11.                              | W. D. Cumming, Esq.<br>[P.]         |
| z a''. Ad. sk.               | Baghdad, Persia.                                          | Kenneth Loftus, Esq.<br>[P.]        |
| b''-d'. ♂ ♀ ad. sk.          | Kandahar, March.                                          | Colonel Swinhoe [P.]                |
| e'', f'. Ad. sk.             | Kashgar ( <i>Dr. Bellew</i> ).                            | India Museum [P.]                   |
| g''. Ad. sk.                 | India.                                                    | Hardwicke Bequest.                  |
| h''. ♂ ad. sk.               | Cashmere, June ( <i>G. Hen-<br/>derson</i> ).             | Hume Coll.                          |
| i', k''. Ad. et imm.<br>sk.  | Cashmere ( <i>Dr. Bellew</i> ).                           | India Museum [P.]                   |
| l'. ♀ ad. sk.                | Cashmere.                                                 | Capt. Stackhouse<br>Pinwill [P.]    |
| m''. ♀ ad. sk.               | Cashmere.                                                 | Tweeddale Coll.                     |
| n'', o''. Ad. sk.            | Woolar Lake, Cashmere.                                    | E. M. Langworthy,<br>Esq. [P.]      |
| p''. Ad. sk.                 | Srinaggur, Aug. 1 ( <i>F. Sto-<br/>liczka</i> ).          | India Museum [P.]                   |
| q''. ♀ ad. sk.               | Srinaggur, 5,000 feet,<br>May 13.                         | J. Biddulph, Esq.<br>[P.]           |
| r''. ♀ ad. sk.               | Jhelum River, Mar. 17.                                    | Dr. Aitchison [P.]                  |
| s''-u''. ♂ ♀ ad.<br>sk.      | North-West India.                                         | Capt. Stackhouse<br>Pinwill [P.]    |



|                                                                         |                                                             |                               |
|-------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------|
| <i>v</i> <sup>1</sup> . ♀ ad. sk.                                       | Oodypur, Feb. 20.                                           | Hume Coll.                    |
| <i>w</i> <sup>1</sup> - <i>b</i> <sup>2</sup> . ♂ ♀ ad. et<br>pull. sk. | Sambhur, Aug.-Dec. ( <i>R.</i><br><i>M. Adam</i> )          | Hume Coll.                    |
| <i>c</i> <sup>1</sup> . Ad. sk.                                         | West coast of India.                                        | Tweeddale Coll.               |
| <i>d</i> <sup>2</sup> , <i>e</i> <sup>2</sup> . ♀ ad. sk.               | Deccan ( <i>Sykes</i> ).                                    | India Museum [P.]             |
| <i>f</i> <sup>2</sup> . ♀ ad. sk.                                       | Depalpur, near Mhow,<br>Jan. 7.                             | Colonel Swinhoe [P.]          |
| <i>g</i> <sup>1</sup> . Ad. sk.                                         | Matteran, Nov. ( <i>S. B. Fair-</i><br><i>bank</i> ).       | Seeborn Coll.                 |
| <i>h</i> <sup>2</sup> . Ad. sk.                                         | Mysore, Feb. 26.                                            | Hume Coll.                    |
| <i>i</i> <sup>1</sup> . Ad. sk.                                         | Ceylon ( <i>H. Neville</i> ).                               | Tweeddale Coll.               |
| <i>k</i> <sup>2</sup> . Ad. sk.                                         | Putnam, W. Ceylon, July<br>15 ( <i>S. Chapman</i> ).        | Tweeddale Coll.               |
| <i>l</i> <sup>1</sup> , <i>m</i> <sup>2</sup> . ♂ ♀ ad. sk.             | Madras.                                                     | Hume Coll.                    |
| <i>n</i> <sup>2</sup> . Juv. sk.                                        | Saugor ( <i>H. T. Hooper</i> )                              | India Museum [P.]             |
| <i>o</i> <sup>1</sup> . ♂ ad. sk.                                       | Calcutta.                                                   | E. Blyth, Esq. [P.]           |
| <i>p</i> <sup>2</sup> . Ad. sk.                                         | Calcutta, Dec.                                              | Hume Coll.                    |
| <i>q</i> <sup>2</sup> , <i>r</i> <sup>2</sup> . Ad. sk.                 | Behar.                                                      | B. H. Hodgson, Esq.<br>[P.]   |
| <i>s</i> <sup>2</sup> - <i>u</i> <sup>1</sup> . Ad. et<br>imm. sk.      | Oudh, Nov., Dec., Jan.                                      | Hume Coll.                    |
| <i>v</i> <sup>2</sup> . ♀ imm. sk.                                      | Kheri Dist., Oudh, Jan. 25<br>( <i>A. Anderson</i> ).       | Hume Coll.                    |
| <i>w</i> <sup>2</sup> - <i>b</i> <sup>1</sup> . Ad. sk.                 | Etawah, Dec.                                                | Hume Coll.                    |
| <i>c</i> <sup>1</sup> . Pull. sk.                                       | Delhi, Sept. 28 ( <i>C. T.</i><br><i>Bingham</i> ).         | Hume Coll.                    |
| <i>d</i> <sup>1</sup> . ♀ ad. sk.                                       | Kumaon Terai, March ( <i>J.</i><br><i>Biddulph</i> ).       | Hume Coll.                    |
| <i>e</i> <sup>1</sup> . Ad. sk.                                         | Nepal.                                                      | Seeborn Coll.                 |
| <i>f</i> <sup>1</sup> , <i>g</i> <sup>1</sup> . Ad. sk.                 | Nepal.                                                      | B. H. Hodgson, Esq.<br>[P.]   |
| <i>h</i> <sup>1</sup> . Ad. sk.                                         | Nepal ( <i>B. H. Hodgson</i> ).                             | India Museum [P.]             |
| <i>i</i> <sup>1</sup> . Ad. sk.                                         | Nepal Valley, Sept. 11 ( <i>J.</i><br><i>Scully</i> ).      | Hume Coll.                    |
| <i>k</i> <sup>1</sup> . Ad. sk.                                         | Sikhoo.                                                     | Hume Coll.                    |
| <i>l</i> <sup>1</sup> , <i>m</i> <sup>1</sup> . Ad. sk.                 | Native Sikhoo, Nov. ( <i>L.</i><br><i>Mandell</i> ).        | Hume Coll.                    |
| <i>n</i> <sup>1</sup> . Ad. sk.                                         | Darjiling.                                                  | India Museum [P.]             |
| <i>o</i> <sup>1</sup> . Ad. sk.                                         | Mir Hills.                                                  | Godwin-Austen Coll.           |
| <i>p</i> <sup>1</sup> , <i>q</i> <sup>1</sup> . Ad. sk.                 | Assam ( <i>McClelland</i> )                                 | India Museum [P.]             |
| <i>r</i> <sup>1</sup> . Ad. sk.                                         | Upper Assam.                                                | Dr. R. Bowdler<br>Sharpe [P.] |
| <i>s</i> <sup>1</sup> . ♂ ad. sk.                                       | Manipur, Feb. 25 ( <i>A. O. H.</i> )                        | Hume Coll.                    |
| <i>t</i> <sup>1</sup> , <i>u</i> <sup>1</sup> . Ad. sk.                 | Manipur.                                                    | Godwin-Austen Coll.           |
| <i>v</i> <sup>1</sup> . ♂ ad. sk.                                       | Mowun. Yunnan, 5,500 ft.,<br>June 5.                        | Dr. J. Anderson [P.]          |
| <i>w</i> <sup>1</sup> . Ad. sk.                                         | Karen mts., Jan. ( <i>R. G.</i><br><i>Wardlaw Ramsay</i> ). | Tweeddale Coll.               |
| <i>x</i> <sup>1</sup> . Ad. sk.                                         | Tounglu ( <i>R. G. W. R.</i> )                              | Tweeddale Coll.               |
| <i>y</i> <sup>1</sup> . Ad. sk.                                         | Near Rangoon.                                               | Hume Coll.                    |
| <i>z</i> <sup>1</sup> , <i>a</i> <sup>1</sup> . ♂ ♀ ad. sk.             | Thamboo, Thantone, Nov. 30<br>( <i>H. Davison</i> ).        | Hume Coll.                    |

3. *Podiceps tricolor*.

*Podiceps* (*Sylbeocyclus*) *tricolor*, *G. R. Gray*, *P. Z. S.* 1860, p. 366 [Ternate].

*Podiceps tricolor*, *Wallace*, *P. Z. S.* 1863, p. 36 [Bouru, Moluccas], p. 487 [Flores; Timor]; *G. R. Gray*, *Hand-l. B.* iii. p. 94 (1871); *Vorderm. Tijdschr. Nederl. Ind.* xlv. p. 222 [Borneo]; *Salvad. Ann. Mus. Civ. Genov.* xiv. p. 670 (1879) [Ké]; xviii. p. 411 (1882); *id. Orn. Pap.* iii. p. 470 (1882); *Blasius*, *J. f. O.* 1883, p. 140 [Celebes]; *Everett*, *J. Str. Br. As. Soc.* xx. p. 212 (1889) [Banjarmasin]; *Nehrkorn*, *J. f. O.* 1894, p. 161 [Batjan]; *Meyer & Wiglesw.* *J. f. O.* 1894, p. 253 [Sanghir & Talaut Is.].

*Podiceps minor*, var. *tricolor*, *Brügg. Abh. nat. Ver. Bremen*, v. p. 98 (1876) [Celebes].

*Podiceps minor*, *Walden (nec Gmel.)*, *Tr. Z. S.* viii. p. 105 (1872) [Celebes]; *Rosenb. Malay. Arch.* p. 279 [Celebes], p. 324 [Ceram], p. 373 [Aru; Ké], p. 404 [Ternate] (1878-79); *Meyer*, *Ibis*, 1879, p. 145 [Celebes].

*Adult in breeding-plumage.* Most nearly allied to typical *P. fluviatilis*, the general colour of the upper parts being black and the chest and rest of underparts dark smoky-black slightly mixed with silvery white. As in *P. philippensis*, the dark patch on the chin barely extends on to the upper part of the throat; the chestnut on the neck and sides of the head extends to behind the eye, but the secondaries are brown with only the basal part of the inner web white. Bill black, base of lower mandible lemon-yellow, this colour extending up towards the eye (*A. R. Wallace*). Total length about 9·5 inches, culmen from feathers on forehead 0·85-0·9, wing 4-4·2, tarsus 1·4, outer toe and claw 1·8.

The British Museum does not possess any examples of this species in winter plumage. Two adult birds shot on the 11th May and 23rd November respectively are similar to one another, both being in fully adult plumage. In the bird shot in November several of the chestnut feathers of the sides of the head and neck are being replaced, not by white winter plumage, but by chestnut, while many new feathers of the upper part of the chest are dark smoky-black, like the old plumage of the rest of the underparts.

I am thus led to the belief that *P. tricolor* does not assume a winter or non-breeding plumage like the rest of its allies.

*Hab.* Borneo, Celebes, Sanghir, Moluccas, Ternate, Batjan, N.W. New Guinea, Bouru, Ceram, Ké, Aru, Flores, and Timor.

|                      |                                           |                                         |
|----------------------|-------------------------------------------|-----------------------------------------|
| <i>a.</i> Ad. sk.    | Flores ( <i>A. R. W.</i> ).               | Wallace Coll.                           |
| <i>b.</i> ♀ ad. sk.  | Tondano Lake, Celebes,<br>2000 feet, Oct. | C. Hose, Esq. [C.]                      |
| <i>c.</i> Ad. sk.    | Menado, N. Celebes.                       | Gould Coll.                             |
| <i>d, e.</i> Ad. sk. | Ternate ( <i>A. R. W.</i> ).              | Wallace Coll. (Type<br>of the species.) |
| <i>f.</i> ♀ ad. sk.  | Ternate, May 11 ( <i>Bernstein</i> ).     | Seebohm Coll.                           |
| <i>g.</i> Ad. sk.    | Bouru ( <i>A. R. W.</i> ).                | Tweeddale Coll.                         |
| <i>h.</i> ♀ ad. sk.  | Lake Wakolo, Bouru, Nov. 23.              | Dr. H. O. Forbes [P.]                   |
| <i>i.</i> Ad. sk.    | Timor.                                    | Wallace Coll.                           |
| <i>k.</i> ♂ ad. sk.  | East Timor.                               | Wallace Coll.                           |

4. *Podiceps albescens*.

*Podiceps albescens*, *Mandelli M.S.*, *vide* *Blanf. Str. F.* v. p. 486 (1877)  
[Native Sikhim], *Blanf. Faun. Brit. Ind., Birds*, iv. p. 476 (1898).

*Adult in breeding-plumage.* General colour above white; forehead, fore-part of the crown, chin, throat, and cheeks blackish; hind part of the head and nape, as well as the fore-neck, rich chestnut; feathers of the upper back and scapulars with dark-brown shaft-streaks; wing-coverts uniform white; primaries ash-brown, whitish towards the base, especially on the innermost; secondaries white, with dark shafts, the two or three outermost blotched with the same colour towards the extremity; humerals white, with the inner web mostly ash; rest of underparts pure shining white. Total length about 7.5 inches, culmen from feathers on forehead 0.75, wing 3.7, tarsus 1.25, outer toe and claw 1.75.

*Hab.* Native Sikhim.

|            |                                                             |                                      |
|------------|-------------------------------------------------------------|--------------------------------------|
| a. Ad. sk. | Native Sikhim, North India,<br>Feb. ( <i>L. Mandelli</i> ). | Hume Coll. (Type<br>of the species.) |
|------------|-------------------------------------------------------------|--------------------------------------|

5. *Podiceps pelzelni*.

*Podiceps pelzelni*, *Hartl. Orn. Madagasc.* p. 83 (1861) [Madagascar];  
*Sclater, P. Z. S.* 1863, p. 165; *Roch & E. Newton, Ibis*, 1863, p. 175;  
*Newton, Ibis*, 1863, p. 460, *Schlegel & Pollen, Rech. Madagasc.* pt. ii  
pp. 151, 160, pl. xl. (1868), *Grandid. Rev. Mag. Zool.* 1868,  
p. 6; *Sharpe, P. Z. S.* 1872, p. 869; *Bartlett, P. Z. S.* 1879,  
p. 773.

*Podiceps minor*, var. *pelzelni*, *Grandid. Hist. Madagasc., Ois.* p. 710  
pls cclxxvi-vii (1885).

*Tachybaptus fluviatilis pelzelni*, *Sclater, Ibis*, 1892, p. 273.

*Adult in breeding-plumage.* General colour of the upper parts dark sooty-brown; forehead, top of the head, and back of the neck nearly black and slightly glossed with greenish; chin, throat, and cheeks pure white, shading into dull whitish brown on the base of the fore neck; a chestnut patch on each side of the neck, commencing behind the ear-coverts and extending along the sides of the hind-neck for about two-thirds of its length; sides of lower back and rump pure white, some of the lateral feathers tinged with rufous; upper part of chest, sides, flanks, and lower belly sooty-brown; rest of underparts pure white; primaries brown, with the basal part especially of the inner web white, the amount of white gradually increasing so that the eleventh quill is white with a brown extremity; secondaries white, with a broad brown band on the margin of the outer web, and a brown subterminal blotch on the inner web of some or most of the quills: "iris dark brown" (*C. Meller*). Total length about 9.5 inches, culmen from feathers on forehead 0.85-0.95, wing 4-4.25, tarsus 1.4, outer toe and claw 1.7.

*Hab.* Madagascar.

|              |                       |                        |
|--------------|-----------------------|------------------------|
| a. Ad. sk.   | S.E. Madagascar.      | A. Crossley, Esq. [C.] |
| b. Ad. sk.   | Betsileo.             | Rev. J. Shaw [C.]      |
| c. Skeleton, | Madagascar, April 13. | Dr. Forsyth Major [P.] |

6. *Podiceps novæ hollandiæ*.

New Holland Grebe, *Lath. Gen. Hist.* x. p. 33 (1824).

*Podiceps novæ hollandiæ*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 18 (1826) [Australia]; *G. R. Gray, Gen. B.* iii. p. 633 (1846); *id. Hand-l. B.* iii. p. 94 (1871); *Ramsay, P. Linn. Soc. N. S. W.* ii. p. 200 (1877); iii. p. 302 (1878) [Laloki River]; iv. p. 102 (1879); *id. Tab. List Austr. B.* p. 22 (1888); *North, Nests & Eggs B. Austr.* p. 343 (1889).

*Podiceps minor*, *Selby (nec Gmel.)*, *Ill. Brit. Orn.* pl. lxxv. fig. 1 (1833).

*Podiceps gularis*, *Gould, P. Z. S.* 1836, p. 145 [New South Wales]; *id. Syn. B. Austr.* pl. fig. 1 (1837-38); *id. B. Austr.* vii. pl. 81 (1843); *G. R. Gray, List of B.* pt. iii. p. 151 (1844); *Reichenb. Natatores*, pl. 13. nos. 758, 759 (1850); *G. R. Gray, Cat. B. N. Guin.* p. 63 (1859); *Gould, Handb. B. Austr.* ii. p. 513 (1865); *Ramsay, Ibis*, 1866, p. 335 [Port Denison]; *id. P. Linn. Soc. N. S. W.* i. p. 386 (1876); *Salvad. Ann. Mus. Civ. Genov.* ix p. 49 (1876) [Bioto]; *Layard, Ibis*, 1877, p. 363, 1878, p. 206, 1882, p. 537 [New Caledonia]; *D'Alb. & Salvad. Ann. Mus. Civ. Genov.* xviii. p. 411 (1882); *Salvad. Orn. Pap.* iii. p. 469 (1882).

*Tachybaptus gularis*, *Reichenow, J. f. O.* 1897, p. 216 [King William's Land].

*Adult in breeding-plumage.* General colour above sooty-black, washed with grey on the back and wing-coverts; forehead, top of the head, and back of the neck black, with a slight greenish gloss: chin, throat, cheeks, and upper part of the fore-neck deep black, shading into brownish on the basal part; a dark chestnut band on each side of the neck, tapering gradually and terminating in a narrow point behind the posterior margin of the eye; sides of the lower back and rump white more or less tinged with rufous; upper part of the chest, sides, flanks, and vent more or less mixed with smoky-black; rest of the underparts shining white; primary-quills brown, with the basal part of both webs white, the amount of white gradually increasing so that the eleventh quill has the basal two-thirds pure white and the terminal third brown; the outer secondaries are similarly coloured, but the white gradually increases, so that on the middle and inner secondaries the brown is reduced to a marginal band on the terminal part of the outer web, and the remaining parts of the feathers as well as the shafts are white. Total length about 9.5 inches, culmen from feathers on forehead 0.8-0.9, wing 4.2-4.5, tarsus 1.4, outer toe and claw 1.85.

*Adult in non-breeding plumage.* Differs from the above in having the chin, throat, cheeks, sides, and fore-part of the neck white like the rest of the underparts.

*Young bird.* Has the sides of the head and neck patterned with longitudinal stripes of brownish black and white, but is otherwise similar to the adult in winter plumage.

*Hab.* Java; Australia; New Guinea; New Caledonia.

|                      |                                      |                        |
|----------------------|--------------------------------------|------------------------|
| <i>a.</i> Ad. sk.    | Australia.                           | Sir T. Mitchell [P.].  |
| <i>b, c.</i> Ad. sk. | S. Australia ( <i>Capt. Sturt</i> ). | Gould Coll.            |
| <i>d.</i> Ad. sk.    | S. Australia.                        | Capt. Sturt, R.N.[P.]. |

|                         |                                                 |                                 |
|-------------------------|-------------------------------------------------|---------------------------------|
| e. Ad. sk.              | New South Wales.                                | Allan Cunningham,<br>Esq. [P.]. |
| f. Ad. sk.              | New South Wales.                                | Gould Coll.                     |
| g. Ad. sk.              | New South Wales.                                | Australian Museum<br>[P.].      |
| h, i. ♀ ad. sk.         | New South Wales.                                | Hume Coll.                      |
| k, l. Ad. sk.           | Queensland (J. T. Cock-<br>erill).              | Salvin-Godman Coll.             |
| m, n. ♀ ad. sk.         | Port Essington, Aug. (J.<br>B. Luke).           | Voyage of H.M.S.<br>'Fly'       |
| o. ♂ juv. sk.           | N.W. Australia, April.                          | J. R. Elsey, Esq. [P.].         |
| p. ♀ imm. sk.           | Mt. Anderson, Nov. 5 (T.<br>H. Bowyer Bower).   | Capt. Bowyer Bower<br>[P.].     |
| q, r. Ad. sk.           | Java.                                           | Tweeddale Coll.                 |
| s. Ad. sk.              | Java.                                           | Gould Coll.                     |
| t. Ad. sk.              | Java.                                           | India Museum [P.].              |
| u. Ad [head &<br>legs]. | S.E. New Guinea (H. H.<br>Romilly).             | Lord Watkinson<br>[P.].         |
| v. Ad. sk.              | Balala, ? New Caledonia<br>(E. L. Layard).      | Seebohm Coll.                   |
| w. Ad. sk.              | Ansi Vata, New Caledonia,<br>Feb. 2 (E. L. L.). | Seebohm Coll.                   |

7. *Podiceps dominicus*.

Le Grebe de rivière de S. Domingue, *Brisas. Orn.* vi. p. 64, pl. v. fig. 2 (1760) [San Domingo].

*Colymbus dominicus*, *Linn. S. N.* i. p. 223 (1766); *Gmel. S. N.* i. pt. ii. p. 593 (1788); *Bonnat. Tabl. Encycl. Méth.* i. p. 57 (1790); *Licht. Voy. Deutch* p. 87 (1823); *Cat. in Schomb. Let. Guiana*, p. 765 (1848); *Index J. t. G. 1851*, p. 119 (California); *J. O. U. Checkl.* p. 74 (1886); *Rubm. Man. N. Am. B.* p. 6 (1887); *Conq. Cat. H. Ind. B.* p. 81 (1892).

Le Castagneux de Saint-Domingue, *Buff. Hist. Nat. Ois.* viii. p. 248 (1781).

White-winged Grebe, *Lath. Gen. Syn.* iii. pt. i. p. 191 (1785); *id. Gen. Hist.* v. p. 32 (1824).

*Podiceps dominicus*, *Lath. Ind. Orn.* ii. p. 785 (1790); *Vieill. N. Ind. u. Hist. Nat.* xiv. p. 446 (1817); *Syll. Ar. Brisas* n. p. 78, pl. 101 (1825); *Steph. in Shaw's Gen. Zool.* xii. pt. 1. p. 7 (1826); *G. R. Gray, Gen. List*, p. 633 (1846); *Gosse, B. Jamaica*, p. 440, pl. cxx (1847); *Reichenb. Natatores*, pl. 13, no. 748, pl. 111 B. no. 2911 (1850); *Sattl. P. Z. S.* 1857, p. 237 [San Domingo]; *Sclater, P. Z. S.* 1857, p. 267 [Jalapa]; *Baird, B. N. Amer.* pl. xcix. fig. 1 (1858); *Sclater & Sclater, Ibis*, 1860, p. 278 [Duchas]; *Taylor, Ibis*, 1866, p. 317 [Igre Island, Honduras]; *Burns & Rose La Plata*, p. 521 (1861); *Laur. Ann. Lyc. N. York*, vi. p. 334 (1861); *Marsh, P. Acad. Philad.* 1864, p. 70 [Jamaica]; *Sclater & Sclater, P. Z. S.* 1864, p. 373 [Panama]; *Leclond, Ois. Princip.*, p. 528 (1863); *Bryant, P. Bot. Soc.* xi. p. 97 (1866); *Schl. Mus. Pays-Bas*, vi. Urnat, p. 17 (1867); *Sclater, P. Z. S.* 1870, p. 219 [Veragua]; *Sclater & Sclater, P. Z. S.* 1870, p. 783 [Merida]; *Conas, Key N. Amer.* B. p. 337 (1872); *id. B. N. West*, p. 736 (1874); *Gundl. J. f. O.* 1875, p. 565 [Luis]; *Merrill, Bull. Nutt. Orn. Cl.* p. 88 (1876) [Texas]; *Con. P. Bahama Is.* p. 22 (1880); *Fauz. P. Z. S.* 1882, p. 19 [N. P. R.]; *Baird, Inw. & Ridgw. Water-B.* N. Amer.

- ii. p. 438 (1884); *Cory, B. Haiti & San Domingo*, p. 185 (1885); *id. Auk*, v. p. 155 (1888); *Salvin, Ibis*, 1889, p. 379 [Cozumel I.]; *Cory, B. W. Ind.* p. 283 (1889).
- Colymbus dominicensis*, *D'Orb. in Sagra, Hist. Cuba*, p. 282 (1839); *Scott, Auk*, viii. p. 354 (1891) [Jamaica].
- Sylbeocyclus dominicus*, *Coues, P. Acad. Philad.* 1862, p. 232; *Sclat. & Salvin, Exot. Orn.* ii. p. 190 (1869); *Lawr. Bull. U.S. Nat. Mus.* iv. p. 52 (1876) [Tehuantepec].
- Tachybaptus dominicus*, *Durnf. Ibis*, 1876, p. 165 [Monte Video]; *Sclat. & Salvin, P. Z. S.* 1879, p. 548 [Antioquia]; *White, P. Z. S.* 1882, p. 629 [Buenos Ayres]; *Tacz. Orn. Pérou*, iii. p. 495 (1886); *Holland, Ibis*, 1892, p. 214 [Argentine Rep.].
- Tachybaptus dominicus*, *Durnf. Ibis*, 1878, p. 405 [Patagonia]; *Ridgw. Bull. U.S. Nat. Mus.* xxi. p. 55 (1881); *Sclat. & Hudson, Argentine Orn.* ii. p. 205 (1889).
- Podicipes dominicus*, *Coues, Key N. Amer. B.* 2nd ed. p. 996 (1884); *Christy, Ibis*, 1897, p. 343 [San Domingo].

*Adult in breeding-plumage.* General colour above brownish black with a slight greenish gloss; forehead, top of the head, and hind-neck black with green gloss; chin and throat dull sooty-black; sides of the head and rest of the neck ash-grey, shading into brownish grey at the base of the fore-neck: sides of the lower back and rump white; chest, sides, and flanks washed with shining reddish brown; breast and belly shining white, more or less mottled with dusky; thighs, vent, and under tail-coverts dusky; inner webs of outer primaries mostly white, the amount of white gradually increasing so that the inner primary-quills are white on the entire inner webs, sometimes white with a dark shaft-stripe, or even pure white in old examples; secondaries white, with a brown band on the margin of the outer web; under wing-coverts pure white. Iris orange; bill black, tip whitish; feet black tinged with greyish (*G. N. Lawrence*). Total length about 8.5 inches, culmen from feathers on forehead 0.8–0.9, wing 3.7–3.85, tarsus 1.15–1.25, middle toe and claw 1.6–1.8.

*Adult in non-breeding plumage.* Differs from the above in having the top of the head, neck, and upper parts browner, especially the fore-neck and chest; chin and throat white.

The black throat begins to appear early in May, and the summer plumage is generally complete by the beginning of June.

*A quite young bird* (Yucatan, April), with the head and neck still partially in down, has the general appearance of the adult in winter plumage, but the top and sides of the head as well as the fore-neck are patterned with black and white much as in the young of *P. fluviatilis*.

*A young male* (Presidio, Mexico, Jan. 16) still shows traces of the white markings on the top and sides of the head, but is otherwise very similar to the adult in winter plumage; it may generally, however, be recognized by having the outer webs of all the primary-quills brown.

*Hab.* Haiti, Jamaica, Cuba, South Texas, Mexico, Central America, and South America as far south as Patagonia.

|                      |                                                        |                                             |
|----------------------|--------------------------------------------------------|---------------------------------------------|
| a. Ad. sk.           | Haiti.                                                 | Sallé Coll.                                 |
| b. Ad. sk.           | Jamaica.                                               | Dr. R. Bowdler Sharpe [P.]                  |
| c. Imm. sk.          | Jamaica.                                               | Purchased.                                  |
| d. Ad. sk.           | San Cristobal, Cuba (G. F. Gaumer.).                   | Salvin-Godman Coll.                         |
| e, f. ♂ ♀ ad. sk.    | Corpus Christi, Texas, March & Dec. (F. B. Armstrong). | Salvin-Godman Coll.                         |
| g-q. ♂ ♀ ad. sk.     | Brownsville, Texas, Apr. 1-May (F. B. A.).             | Salvin-Godman Coll.                         |
| r. ♂ juv. sk.        | Presidio, West Mexico, Jan. (A. Forrer).               | Salvin-Godman Coll.                         |
| s. ♀ ad. sk.         | Tepic, May 20 (W. B. Richardson).                      | Salvin-Godman Coll.                         |
| t. ♀ ad. sk.         | Coatepec, Vera Cruz, June 30 (Ferrari-Perez).          | Salvin-Godman Coll.                         |
| u, v. Ad. sk. et st. | Guatemala.                                             | Gould Coll.                                 |
| w. Ad. st.           | Guatemala (summer).                                    | Tweeddale Coll.                             |
| x. Ad. sk.           | Retalhuleu, Guatemala.                                 | Salvin-Godman Coll.                         |
| y. Ad. sk.           | Cobau, Vera Paz, Jan. (O. S.).                         | Salvin-Godman Coll.                         |
| z, a'. Ad. sk.       | Lake of Hueñas, Guatemala, Nov. (O. S.).               | Salvin-Godman Coll.                         |
| b'. Juv. sk.         | Bucutz, Yucatan, April (G. F. Gaumer).                 | Salvin-Godman Coll.                         |
| c' k'. ♂ ♀ ad. sk.   | Cozumel I., Yucatan (G. F. G.).                        | Salvin-Godman Coll.                         |
| l'. ♂ ad. sk.        | Costa Rica (Endres).                                   | Salvin-Godman Coll.                         |
| m'. Ad. sk.          | San Jose, Costa Rica (J. Carmichael).                  | Salvin-Godman Coll.                         |
| n', o'. ♂ ad. sk.    | Castillo, Veragua (E. Arct).                           | Salvin-Godman Coll.                         |
| p'. ♂ ad. sk.        | Panama (J. McLennan).                                  | Salvin-Godman Coll.                         |
| q', r'. Ad. sk.      | S. America.                                            | Purchased.                                  |
| s', t' ♀ ad. sk.     | Antioquia, U S Colombia (T. K. Salmon).                | Salvin-Godman Coll.                         |
| u' Ad. sk.           | British Guiana                                         | J. J. Queleh & F. V. McConnell, Esqrs. [P.] |
| v'. Ad. sk.          | Brazil.                                                | M. Claussen [P.]                            |
| w'. Ad. sk.          | Bahia, Brazil (Wucherer).                              | Salvin-Godman Coll.                         |
| x'. ♀ ad. sk.        | Ypanema, Sao Paulo, Sept. 11 (J. Natterer).            | Salvin-Godman Coll.                         |
| y'. Ad. sk.          | Chapaca, Matto Grosso (H. H. Smith).                   | Salvin-Godman Coll.                         |
| z. Ad. sk.           | Eastern Peru (Farris).                                 | Salvin-Godman Coll.                         |
| a' Sternum           |                                                        |                                             |

### 8. *Podiceps poliocephalus*.

*Podiceps poliocephalus*, *Jardine & Selby, Ill. Orn.* i. p. 13, pl. 13 (1827); *Australia*, *Gould, B. Austr.* vii. pl. 82 (1843); *G. R. Gray, List of B. pt in* p. 151 (1844), *id. Gen. B.* iii. p. 133 (1846); *Reichenb. Natatores*, pl. 13, no. 755 (1850); *Schl. Mus. Pays-Bas*, vi. Uniat p. 41 (1867).

*Podiceps nestor*, *Gould, P. Z. N.* 1836, p. 145 [N. S. Wales & Tasmania]; *id. Syn. B. Austr.* pl. fig. 2 (1857-58); *Reichenb. Natatores*, pl. 13 nos. 753, 754 (1850); *Gould, Handb. B. Austr.* ii. p. 512 (1865); *G. R. Gray, Hand-l. B.* iii. p. 94 (1871); *Ramsay, Tab. List Austr. B.* p. 22 (1888); *North, Nests & Eggs B. Austr.* p. 347 (1889).

*Adult in breeding-plumage.* General colour above, including the

nind-neck, ash-brown; sides of lower back and rump white; some of the feathers of the back with pale greyish margins; forehead and crown brownish black, shading into deep black on the feathers of the occiput and nape, which are elongate and form a sort of hood; sides of the face, chin, and throat pale brownish white, the feathers on the forehead, crown, and sides of the head and throat with long white hair-like extremities, longest on the sides of the head; fore-neck and chest white tinged with rufous; belly and vent dusky; rest of underparts pure white; the first three or four primaries mostly ash-brown, the fifth and sixth white tipped with ash-brown; the remainder almost pure white; secondaries white, narrowly margined with ash-brown towards the tip of the outer margin. Total length about 9·5 inches, culmen from feathers on forehead 0·6–0·8, wing 4·3–4·4, tarsus 1·5, outer toe and claw 1·9.

*Adult in non-breeding plumage.* Differs from the above in having the top of the head and back of the neck uniform greyish brown; the chin, throat, sides and fore part of the neck, as well as the chest, white; and the white hair-like filaments on the feathers of the head absent or rudimentary.

*Immature birds* resemble the adult in non-breeding plumage.

*Hab.* Australia and Tasmania.

|                                 |                                           |                                |
|---------------------------------|-------------------------------------------|--------------------------------|
| <i>a.</i> Ad. sk.               | Australia, Aug. 1 ( <i>L. Chandler</i> ). | Gould Coll.                    |
| <i>b-d.</i> Ad. sk.             | Queensland ( <i>J. T. Cockereli</i> ).    | Salvin-Godman Coll.            |
| <i>e, f.</i> ♂ ♀ ad. sk.        | New South Wales.                          | Australian Museum<br>[P.]      |
| <i>g.</i> Ad. sk.               | Murray R., Victoria.                      | C. D. E. Fortnum,<br>Esq. [P.] |
| <i>h.</i> Ad. sk.               | S. Australia, Dec.                        | Hume Coll.                     |
| <i>i, k.</i> Ad. et imm.<br>sk. | S. Australia ( <i>J. Gould</i> ).         | Sir G. Grey [P.]               |
| <i>l, m.</i> ♂ ♀ ad. sk.        | S. Australia.                             | Dr. R. H. Perks [C.]           |
| <i>n.</i> Ad. st.               | Tasmania.                                 | Ronald Gunn, Esq.<br>[P.]      |

## 9. *Podiceps rufipectus*.

*Podiceps (Polioccephalus) rufipectus*, *G. R. Gray in Dieffenbach, Trav. N. Z., App.* p. 198 (1843) [New Zealand].

*Podiceps rufipectus*, *G. R. Gray, Voy. Erebus & Terror, Birds*, p. 16, pl. 19 (1845); *id. Ibis*, 1862, p. 242 [Tairi R., S. Island]; *Hutton, Ibis*, 1870, p. 398 [Auckland]; *Potts, Tr. N. Z. Inst.* ii. pp. 50, 73 (1870); *Finch, J. f. O.* 1870, p. 350, 1872, p. 261, 1874, pp. 174, 217; *G. R. Gray, Hand-l. B.* iii. p. 94 (1871); *Buller, B. N. Zeal.* p. 350 (1873); *id. Man. B. N. Zeal.* p. 75 (1882); *id. B. N. Zeal.* 2nd ed. ii. p. 280 (1888).

*Podiceps rufipectus*, *G. R. Gray, Gen. B.* iii. p. 633 (1846); *id. List of B.* pt. iii. p. 150 (1844); *Reichenb. Natatores*, pl. 13. no. 749 (1850).

*Adult in breeding-plumage.* General colour above dark brownish black, with more or less distinct sandy-brown edgings to the feathers of the back and scapulars; sides of the lower back and rump mostly white; forehead, crown, and back of the neck black, darkest and



somewhat glossed on the occiput and nape; sides of the head, chin, throat, and upper part of the fore-neck light brown; the feathers of the head with grey hair-like tips, most marked on the sides of the crown and throat; base of fore-neck and chest light red; sides and flanks brown tinged with rufous; lower belly and vent dusky; breast and rest of underparts pure white; outer primary-quills brown with the basal part of the inner web white, the amount of white gradually increasing on the inner quills, so that the 9th to the 11th feathers have the basal two-thirds or more white, and the terminal portion brown; secondaries very similar to the three innermost primaries, but the brown on the outer web extends for some distance down the margin. Total length about 11 inches, culmen from feathers on forehead 0·8-0·95, wing 4·6, tarsus 1·6, outer toe and claw 1·9.

*Adult in non-breeding plumage.* Probably does not differ from the adult in breeding plumage.

*A quite young bird* has the head and back of the neck dark brown with two stripes of white, one commencing above the eye, the other below, and continued to the nape; the chin and throat white, base of the fore-neck and chest pale dull rufous-brown; rest of the plumage much like that of the adult.

*In an older example* the white stripes on the sides of the head, characteristic of immaturity, have disappeared and the feathers of the top of the head have short hair-like whitish tips.

*Hab.* New Zealand.

|                                   |                                                                                |                                                |
|-----------------------------------|--------------------------------------------------------------------------------|------------------------------------------------|
| <i>a.</i> Ad. sk.                 | New Zealand.                                                                   | Dr. A. Sinclair [P.]<br>(Type of the species.) |
| <i>b.</i> Ad. sk.                 | New Zealand.                                                                   | Gould Coll.                                    |
| <i>c.</i> Ad. sk.                 | New Zealand.                                                                   | New Zealand Co.<br>[P.]                        |
| <i>d, e.</i> Ad et imm<br>sk.     | New Zealand.                                                                   | Colonial Museum,<br>Wellington [E.]            |
| <i>f.</i> Ad. sk.                 | New Zealand                                                                    | Dr. H. O. Forbes<br>[P.]                       |
| <i>g.</i> ♂ & ♀ ad. et<br>av. sk. | Port Cooper, East coast of S.<br>Island, New Zealand (P.<br><i>Stranger</i> ). | Capt. Stokes, R.N.<br>[P.]                     |
| <i>h.</i> Ad. sk.                 | Waimate, East coast of S. Is-<br>land.                                         | Antarctic Expedition<br>[P.]                   |
| <i>i.</i> Ad. sk.                 | T. M. R., South Island*.                                                       | Percy Earl, Esq. [C.]                          |
| <i>m.</i> Ad. sk.                 | Otago.                                                                         | Otago University<br>Museum [E.]                |

#### 10. *Podiceps americanus*.

*Podiceps americanus*, *Garrot, Voy. Coquille, Zool. i.* p. 599 (1826)  
[Chil., Brazil], *G. R. Gray, Gen. B. m.* p. 633 (1846); *Gay, Hist. Ch. Zool. i.* p. 465 (1847), *Schl. Mus. Pays-Bas, vi.* Urinat.  
p. 42 (1847).

*Podiceps chilensis*, *Garrot, Voy. Coquille, Zool. i.* p. 601 (1826)  
[Cotopacchi], *G. R. Gray, Gen. B. m.* p. 633 (1846).

*Podiceps chilensis*, *Jess, Traité d'Orn.* p. 594 (1831).

\* See *G. R. Gray, Voy. Erebus and Terror, Birds*, p. 16 (1845).

*Podiceps chilensis*, Gould, *Zool. Voy. Beagle*, pt. iii. *Birds*, p. 137 (1841) [Tierra del Fuego; Buenos Ayres]; Gay, *Hist. Chili, Zool.* i. p. 464 (1847); Reichenb. *Natatores*, pl. 13. no. 750 (1850).

*Podiceps rollandi*, Gould (nec Q. & G.), *Zool. Voy. Beagle*, pt. iii. *Birds*, p. 137 (1841) [part]; G. R. Gray, *List of B.* pt. iii. p. 151 (1844); Fraser, *P. Z. S.* 1843, p. 119 [Chili]; Gay, *Hist. Chili, Zool.* i. p. 463 (1847); Sclat. & Salvin, *P. Z. S.* 1848, p. 146 [Conchitas]; *ibid.* *Ibis*, 1868, p. 189 [Straits of Magellan]; *ibid.* *P. Z. S.* 1869, p. 158 [Tungasuca]; *ibid.* *Erot. Orn.* ii. p. 190 (1869) [part]; Durnf. *Ibis*, 1877, p. 45 [Chupat R.]; Sharpe, *P. Z. S.* 1881, p. 17 [S. Chili; Straits of Magellan; Patagonia]; White, *P. Z. S.* 1882, p. 629, 1883, p. 43 [Argentine Republic]; Sclater, *P. Z. S.* 1883, p. 432 [Chili]; Barrows, *Auk*, i. p. 317 (1884) [Lower Uruguay]; Tacz. *Orn. Pérou*, iii. p. 494 (1886); Sclat. & Hudson, *Argentine Orn.* ii. p. 204 (1889); Kerr, *Ibis*, 1892, p. 151 [R. Pilcomayo]; Holland, *Ibis*, 1892, p. 214 [Argentine Republic]; Lane, *Ibis*, 1897, p. 313 [Chili].

*Rollandia micra*, Bonap. *C. R.* xlii. p. 775 (1856).

*Podiceps leucotis*, Tacz. *P. Z. S.* 1874, p. 563 [Central Peru].

*Adult in breeding-plumage.* General colour above, including the head and neck, black, with some greenish gloss; the feathers of the back, scapulars, and base of the fore-neck more or less distinctly edged with sandy-brown; feathers of the crown lengthened and forming a crest; ear-coverts pure white; long feathers of the sides of the crown white with black tips, which partially hide the ear-coverts; chin, throat, and fore-neck dark sooty-black; rest of underparts, including the sides and flanks, dull rufous, inclining to vinaceous and with a silky gloss; the feathers of the sides and flanks with dark blackish extremities, and the breast and abdomen slightly varied with indistinct dusky bars; primary-quills dark ash-brown, white towards the basal part of the inner web, the amount of white gradually increasing on the inner feathers, the innermost being mostly white; secondaries pure white, the outermost and innermost with some ash-brown along the shaft and towards the extremity; wing-coverts dark ash-brown. Iris red; bill black; legs and toes slate-colour (*H. Whiteley*), grey, dark grey, or olive-green (*Dr. Copping*). Total length about 11.5 inches, culmen from feathers on forehead 0.65-0.9, wing 4.3-4.5, tarsus 1.4, outer toe and claw 1.9.

*Adult in non-breeding plumage.* Differs from the above in having the feathers of the top of the head much less elongate and edged with sandy-brown like those of the back; the back of the neck dark sooty-brown and but slightly glossed, the chin and throat pure white; the sides and fore-part of the neck dull rufous buff, and the chest and rest of underparts white with a dull vinous tinge.

As will be seen from the above measurements, the length of the culmen varies considerably among fully adult birds.

*Immature* examples resemble the adult in winter plumage, but the sides of the head, as well as the chin and throat, are longitudinally streaked with brownish black.

*Hab.* Central and Southern parts of South America, from Central

Peru, the Argentine Republic and Uruguay, to the Straits of Magellan.

|                             |                                                                        |                                         |
|-----------------------------|------------------------------------------------------------------------|-----------------------------------------|
| a, b. Ad. sk.               | Lake Titicaca, Peru.                                                   | Salvin-Godman Coll.                     |
| c. Ad. sk.                  | Lake Tungasaca, Peru, July 2<br>(H. Whitely).                          | Tweeddale Coll.                         |
| d. ♀ ad. sk.                | Lake Junin, May 13 (J. Kalinowski).                                    | Count Branicki [P.].                    |
| e. Ad. sk.                  | Bolivia.                                                               | Gould Coll.                             |
| f. Ad. sk.                  | Chili                                                                  | T. Bridges, Esq. [C.].                  |
| g. ♀ ad. sk.                | Chili (E. C. Reid).                                                    | Tweeddale Coll.                         |
| h. Juv. sk.                 | Chili.                                                                 | Gould Coll.                             |
| i. g. Ad. sk.               | Central Chili (Landbeck).                                              | Berkeley James Coll.                    |
| r. ♂ ad. sk.                | Province of Santiago, Chili<br>(Leighold).                             | Salvin-Godman Coll.                     |
| s, t. ♂ ♀ ad. sk.           | Talcahuano, Chili, Mar. & Sept.<br>(Dr. Copping).                      | Voyage of H.M.S.<br>'Alert.'            |
| u, v. Ad. et imm.<br>sk.    | Talcahuano (Admiral A. H.<br>Markham).                                 | Salvin-Godman Coll.                     |
| w. ♀ juv. sk.               | Rio Bueno, Jan. 13 (A. A.<br>Lane).                                    | Berkeley James Coll.                    |
| x, y. ♂ ♀ ad. sk.           | Llanquihue, Dec. (A. A. L.).                                           | Berkeley James Coll.                    |
| z, a'. Ad. et juv.<br>sk.   | East coast of Chiloe I., Jan. 4<br>(C. Darwin).                        | Gould Coll.                             |
| b'. Ad. sk.                 | Straits of Magellan.                                                   | Sir W. Burnett &<br>Capt. Fitzroy [P.]. |
| c'. Ad. sk.                 | Straits of Magellan (Capt. P. P.<br>King).                             | The Admiralty [P.].                     |
| d'. Ad. sk.                 | Portland Bay, Straits of Magel-<br>lan, March 20 (Dr. Cop-<br>pinger). | Voyage of H.M.S.<br>'Alert.'            |
| e'. ♂ juv. sk.              | Peckett Harbour, Straits of<br>Magellan, Jan. 4 (Dr. Cop-<br>pinger).  | Voyage of H.M.S.<br>'Alert.'            |
| f, g'. ♂ ad. et<br>juv. sk. | Buenos Ayres, Feb., April (F.<br>Withington).                          | Sclater Coll.                           |
| h. Juv. sk.                 | Buenos Ayres.                                                          | Allan Peel, Esq. [C.].                  |
| i'. Ad. sk.                 | Lucan Bridge, Buenos Ayres.                                            | Allan Peel, Esq. [C.].                  |
| k'. Ad. sk.                 | Chirleay, Buenos Ayres, Aug. 3.                                        | H. Duruford, Esq.<br>[C.].              |
| l, m'. Ad. sk.              | Santa Elena, Soriano, Uruguay,<br>Feb., April                          | O. V. Aplin, Esq.<br>[C.].              |
| n'. Skeleton.               | Chili.                                                                 | Dr. A. Gunther [C.].                    |
| o. Skeleton.                | Chili.                                                                 |                                         |

### 11. *Podiceps rollandi*.

*Podiceps rollandi*, Quoy & Gaim. Voy. Uranie, p. 133, pl. 36 (1824)  
[Falkland Islands].

*Podiceps rollandi*, Gould, Zool. Voy. Beagle, pt. iii. Birds, p. 137  
(1841) [part; Falkland Is.]; G. R. Gray, Gen. B. iii. p. 633 (1846);  
Reichenb. Natator, pl. 13. nos 751-752 (1850); Sclater, P. Z. S.  
1860, p. 380; Abbott, Ibis, 1861, p. 162; Schl. Mus. Pays-Bas, vi.  
Urinat p. 42 (1867); Sclat. & Salvin, Ecot. Orn. ii. p. 190 (1869)  
[part]; Gibson, Ibis, 1880, p. 164 [Buenos Ayres: breeding  
habits].

*Rollandia leucotis*, Cur., fide Bonap. C. R. xlii. p. 775 (1856); G.  
R. Gray, Hand-l. B. iii. p. 94 (1871).

*Adult in breeding-plumage.* Resembles *P. rollandi*, but may be at once distinguished by its much larger size as well as by the colour of the breast and underparts, which are much brighter rufous chestnut. The general colour of the head and neck, including the chin and throat, is black glossed with bluish green, and the green gloss on the upper parts of the body is more pronounced. The amount of white on the secondary-quills varies considerably in apparently fully adult birds; some individuals have the middle quills nearly pure white, with only the parts of the web next the shaft ash-brown, while in others the same feathers have the outer web and a part of the inner web ash-brown. Most examples have the tips of the secondaries washed with rufous buff. "Iris fine red" (*C. Darwin*). Total length about 14 inches, culmen from feathers on forehead 1-1.2, wing 5.3-5.5, tarsus 1.8, outer toe and claw 2.5-2.6.

The adult in non-breeding plumage apparently resembles that of *P. rollandi*. I have not been able to examine an individual in non-breeding-plumage, but a bird which has partially attained the breeding-plumage has the greater part of the breast and belly whitish mixed with freshly-moulted chestnut feathers.

*Hab.* Falkland Islands.

|                        |                                                                               |                               |
|------------------------|-------------------------------------------------------------------------------|-------------------------------|
| <i>a-e.</i> Ad. sk.    | Falkland Is.                                                                  | Antarctic Exped. [P.]         |
| <i>f.</i> Ad. sk.      | Falkland Is. ( <i>Leconte</i> ).                                              | Salvin-Godman Coll            |
| <i>g.</i> ♀ ad. sk.    | Falkland Is., July 21 ( <i>J. Macgillivray</i> ).                             | Voy. of H.M.S. 'Rattlesnake.' |
| <i>h, i.</i> Pull. sk. | Falkland Is.                                                                  | Gould Coll.                   |
| <i>k, l.</i> Ad. sk.   | Port Stanley, E. Falkland Island, Feb. ( <i>J. F. King</i> ).                 | Frank Arthy, Esq. [P.]        |
| <i>m.</i> ♀ ad. sk.    | Fish-house Creek, Berkeley Sound, E. Falkland I., June 13 ( <i>R. McC.</i> ). | McCormick Bequest.            |

## 12. *Podicipes auritus*.

- Black and White Dob-chick, *Edw. Nat. Hist. B.* ii. pl. 96. fig. 1 (1747).  
 Eared or Horned Dob-chick, *Edw. Nat. Hist. B.* ii. pl. 96. fig. 2 (1747), iii. pl. 145 (1750); *Pennant, Arct. Zool.* ii. p. 497 (1785).  
 La petite Grebe hupée, *Brisson, Orn.* vi. p. 42, pl. iii. fig. 2 (1760); *Buff. Hist. Nat. Ois.* viii. p. 235 (1781).  
 La petite Grebe cornue, *Brisson, Orn.* vi. p. 50 (1760); *Buff. Hist. Nat. Ois.* viii. p. 237 (1781).  
 La petite Grebe, *Brisson, Orn.* vi. p. 56 (1760).  
*Colymbus auritus*, *Linn. S. N.* i. p. 222 (1766); *Bonnat. Tabl. Encycl. Méth.* i. p. 56, pl. 45. fig. 3 (1790); *Pallas, Zoogr. Rosso-As.* ii. p. 356 (1811); *Stejn. Bull. U. S. Nat. Mus.* xxix. p. 14 (1885) [Bering I.], p. 313 [Kamschatka]; *A. O. U. Check-l.* p. 74 (1886); *Seton, Auk*, iii. p. 147 (1886) [W. Manitoba]; *Ridgw. Man. N. Am. B.* p. 5 (1887); *Nelson, Rep. N. H. Alaska*, p. 35 (1887); *Warren, B. Pennsylv.* p. 1, pl. 11 (1888); *Scott, Auk*, v. p. 373 (1888) [Gulf of Florida]; *Bishop, Auk*, vi. p. 144 (1889) [Magdalen Is.]; *Clarke, Auk*, vii. p. 320 (1890) [Hudson Bay]; *Hartert, Kat. Mus. Senckenb.* p. 245 (1891); *MacFarl. P. U. S. Nat. Mus.* xiv. p. 415 (1891) [Arctic America]; *Hatch, B. Minnesota*, p. 6 (1892);

- Scott, Auk*, ix. p. 211 (1802) [Caloosahatchie R., Florida];  
*McIlhenny, R. Ontario*, ed. 2, p. 26 (1894).  
 Lesser Crested Grebe, *Pennant, Brit. Zool* ii. p. 390 (1768).  
 White and Dusky Grebe, *Pennant, Brit. Zool* ii. p. 397 (1768).  
 ? *Colymbus nigricans*, *Scop. Annus*, i. p. 77 (1769).  
 Le petit Grebe, *D'Aubert, Pl. Enl.* ix. pl. 43 [no. 942]; *Buff. Hist. Nat. Ois.* viii. p. 232 (1781).  
 Grebe de l'Esclavonie, *D'Aubert Pl. Enl.* ix. pl. 46 [no. 404].  
*Colymbus duplicatus*, *P. L. S. Mull. Suppl. Linn. S. N.* p. 107 (1776).  
 Dusky Grebe, *Pennant, Aret. Zool.* ii. p. 498 (1783); *Lath. Gen. Syn.* iii. pt. i. p. 286 (1785); *id. Gen. Hist.* x. p. 20 (1824).  
 Eared Grebe, var. A, *Lath. Gen. Syn.* iii. pt. i. p. 286 (1785).  
 Horned Grebe + var. A, *Lath. Gen. Syn.* iii. pt. i. p. 287, pl. xci. (1785); *id. Gen. Hist.* x. p. 25 (1824).  
*Podiceps nigricans*, *Lath. Gen. Syn. Suppl.* i. p. 294 (1787).  
*Colymbus cornutus*, *Gmel. S. N.* i. pt. ii. p. 591 (1788); *Naum. Nat. Vog. Deutschl.* ix. p. 739, pl. 244 (1838).  
*Colymbus obscurus*, *Gmel. S. N.* i. pt. ii. p. 592 (1788); *Bonnat. Tabl. Encycl. Meth.* i. p. 53, pl. 45, fig. 2 (1790).  
*Colymbus caspius*, *Gmel. S. N.* i. pt. ii. p. 593 (1788); *Bonnat. Tabl. Encycl. Meth.* i. p. 54 (1790).  
*Podiceps obscurus*, *Lath. Ind. Orn.* ii. p. 782 (1790); *Vicill. N. Dict. d'Hist. Nat.* xiii. p. 441 (1817).  
*Podiceps caspius*, *Lath. Ind. Orn.* ii. p. 784 (1790); *Ménière. Cat. Rara*, p. 54 (1832).  
*Colymbus comosus*, *Bonnat. Tabl. Encycl. Meth.* i. p. 56 (1790) [Hudson Bay].  
*Podiceps cornutus*, *Lath. Ind. Orn.* ii. p. 782 (1790); *Meyer & Wolf, Taschenb.* ii. p. 431, pl. (1810); *Temm. Man. d'Orn.* p. 466 (1815); *Vicill. N. Dict. d'Hist. Nat.* xiii. p. 441 (1817); *Temm. Man. d'Orn.* i. p. 221 (1810); *Full. Nat. Ois.* i. p. 203, pl. 281 (1825); *Steph. & Shaw's Gen. Zool.* xiii. pt. i. p. 9 (1825); *Proc. Zool. Acclimat. Soc.* p. 60, fig. 1 (1821-28); *Snyder & Richards Fauna Bor.-Amer.* p. 411 (1834) [Gr. Slave Lake]; *Schinz, Nat. Abbild. Vog.* p. 363, pl. 128 (1833); *Song, Brit. Orn.* ii. p. 307, pl. lxxix figs 1 & 2 (1833); *Nils. Skand. Faun.* i. p. 489 (1835); *And. Orn. Biogr.* i. p. 423, pl. 270 (1835); *id.* p. 62 (1839); *Gould, B. Eur.* v. pl. 390 (1837); *Kornm., Skand. Faun.* p. 22, pl. 60 fig. 3 (1839-46); *Schinz, Europ. Faun.* i. p. 353 (1840); *Keys & Blas. Warbelth.* p. 235 (1840); *Forst., Orn. Sicil.* p. 174 (1840); *Demid. Voy. Russ. Mercl.* iii. p. 304 (1840); *Boutelle, Orn. Dauphiné*, ii. p. 226, pl. 59, fig. 3 (1843); *G. R. Gray, List of B.* pt. iii. p. 150 (1844); *And. B. Amer.* vii. p. 316, pl. 181 (1844); *G. R. Gray, Gen. B.* iii. p. 633 (1846); *Degl. Orn. Europ.* ii. p. 503 (1849); *Reichenb., Natatacs*, pl. 12 nos. 745-747 (1850); *Thomps. Nat. Hist. Irel.* iii. p. 86 (1851); *Mullend. Sibir. Reise*, ii. pt. ii. p. 238 (1851); *Kjerfoll. Dama. Fugle*, p. 401, pl. xxxix. (1852); *Macgill. Brit. B.* v. p. 264 (1852) (no. fig. = *P. griseigena*); *Watters, N. Hist. B. Irel.* p. 220 (1853); *Brandt in Hoffmann, N. Ural. Exped.* ii. App. p. 71 (1856); *Schrenck, Reis. Amur-l.* p. 492 (1859); *Jones, Nat. Bermuda*, pp. 50, 87 (1859); *Jaubert & Lapommi. Rich. Orn.* p. 496 (1859); *Baird, B. N. Amer.* p. 805 (1860); *Cooper & Suckl. N. H. Wash. Terr.* p. 281 (1860); *Pourys, Ibis*, 1860, p. 349 [Butrinto, Epirus]; *Reinhardt, Ibis*, 1861, p. 15 [S. Greenland]; *Ross, Nat. Hist. Rec.* 1862, p. 290 [Mackenzie R.]; *Blakiston,*

- Ibis*, 1862, p. 10 [Saskatchewan], 1863, p. 154 [Brit. North America]; *Radde*, *Ost-Sib.* ii. p. 381 (1863); *Swinhoe*, *P. Z. S.* 1863, p. 322 [China; Amoorland]; *Wright*, *Ibis*, 1864, p. 157 [Malta]; *Schl. Mus. Pays-Bas*, vi. *Urinat.* p. 36 (1867); *Coues*, *P. Essex Inst.* v. p. 310 (1868) [New England]; *Collett*, *Vid. Selak. Forh. Christ.* 1868, p. 190; *Brown*, *Ibis*, 1868, p. 427 [Vancouver I.]; *Turnb. B. E. Pennsylvania*, p. 49 (1869); *Dall & Bann. Tr. Chicago Acad.* i. p. 308 (1869) [Alaska]; *Droste*, *J. f. O.* 1869, p. 349 [Faroes]; *G. R. Gray*, *Hand-l. B.* iii. p. 93 (1871); *R. Gray*, *B. West Scott.* p. 407 (1871); *Swinhoe*, *P. Z. S.* 1871, p. 415 [Amoy, winter]; *Coues*, *Key N. Amer. B.* p. 337 (1872); *Maynard*, *P. Bust. Soc. N. H.* xiv. p. 385 (1872) [New Haven]; *Finsch*, *Abh. nat. Ver. Bremen*, iii. p. 76 (1872); *Irby*, *Ibis*, 1873, p. 98 [Gibraltar]; *Severtz*, *Turkest. Jevotnie*, p. 69 (1873); *id.* *J. f. O.* 1873, p. 386 [Tian-shan], 1874, p. 409; *Coues*, *B. N.-West*, p. 731 (1874); *Swinh. Ibis*, 1875, p. 456 [Hakodadi]; *Bau, etc.* *J. f. O.* 1877, p. 342 [Germany]; *David & Oustal. Ois. Chine*, p. 513 (1877); *Tacz. Bull. Soc. Z. Fr.* ii. p. 166 (1877) [Poland]; *Scott*, *Bull. Nutt. Orn. C.* iv. p. 228 (1879) [New Jersey]; *Maynard*, *B. E. N. Amer.* p. 496 (1881); *Seebohm*, *Ibis*, 1882, p. 231 [Astrakan], p. 369 [Japan]; *Hartl. J. f. O.* 1883, p. 284 [Alaska]; *Samuels*, *N. & E. Birds*, p. 561 (1883); *Stearns & Coues*, *N. Engl. B.-life*, p. 392 (1883); *Radde*, *Orn. Caucas.* p. 490 (1884); *Reid*, *Bull. U.S. Nat. Mus.* xxv. p. 277 (1884) [Bermuda]; *Seebohm*, *Hist. Brit. B.* iii. p. 462 (1885); *Booth*, *Rough Notes*, iii. pt. x. (1886); *Gigl. Avif. Ital.* p. 453 (1886); *id.* *Avif. Ital.* i. p. 667 (1889), ii. p. 659 (1890); *Seebohm*, *B. Japan*, p. 367 (1890); *La Touche*, *Ibis*, 1892, p. 503 [Foochow]; *Gätke*, *Heligoland*, Engl. ed. p. 586 (1895).
- Podiceps arcticus*, *Boie*, *Tageb. Reise durch Norweg.* pp. 308, 350 (1822); *Werner*, *Atl. Ois. d'Eur. Ord.* 14, pl. 7 (1828); *Nilss. Skand. Faun.* ii. p. 492 (1835); *Korner*, *Skand. Fogl.* p. 22, pl. 60. fig. 5 (1839-46); *Schinz*, *Europ. Faun.* i. p. 354 (1840); *Temm. Man. d'Orn.* ed. ii. pt. iv. p. 450 (1840); *Reichenb. Natatores*, pl. 12. nos. 742-744 (1850); *Kjærboll. Danm. Fugle*, p. 401, pl. xxxix. (1852); *Lütken*, *Ornis*, 1885, p. 143 [Denmark]; *Dalla Torre & Tschusi*, *Ornis*, 1885, p. 556 [Austro-Hungary], 1887, p. 345, 1888, p. 359, 1890, p. 261; *Tschusi*, *Ornis*, 1886, p. 174 [local names]; *Gröndal*, *Ornis*, 1886, p. 268 [Iceland]; *Meyer & Helm*, *Zeit. ges. Orn.* iv. p. 398 (1887).
- Rufous-breasted Grebe, *Lath. Gen. Hist.* x. p. 33 (1824).
- Podiceps ambiguus*, *Lesson*, *Traité d'Orn.* p. 595 (1831).
- Podiceps bicornis*, *Brehm*, *Handb. Vög. Deutschl.* p. 960 (1831).
- Horned Grebe or Dobchick, *Nutt. Man. Orn.* p. 254 (1834).
- Colymbus arcticus*, *Naum. Nat. Vög. Deutschl.* ix. p. 755, pl. 245 (1838).
- Slavonian Grebe, *Farrell*, *Hist. Brit. B.* iii. p. 308 (1843).
- Podiceps slavus*, *Bonap. C. R.* xlii. p. 77 (1856).
- Podiceps auritus*, *Sunder. Srensk. Fogl.* pl. 54. figs. 4-6 (1856); *Degl & Gerbe*, *Orn. Europ.* ii. p. 584 (1867); *Whitely*, *Ibis*, 1867, p. 209 [Hakodadi]; *Gould*, *B. Gr. Brit.* v. pl. 40 (1870); *Fritsch*, *Nat. Vög. Europa's*, p. 504 (1870), *Atl.* pl. 61. fig. 10 (1871); *G. R. Gray*, *Hand-l. B.* iii. p. 93 (1871); *Fritsch*, *J. f. O.* 1872, p. 378 [Bohemia]; *Irby*, *Orn. Gibraltar*, p. 220 (1875); *Severtz*, *J. f. O.* 1875, p. 186 [Tian-shan]; *Danf. & Brown*, *Ibis*, 1875, p. 484 [Transylvania]; *Palmén*, *J. f. O.* 1876, p. 64 [Finland]; *Dresser*, *Ibis*, 1876, p. 414; *id.* *B. Europe*, viii. p. 645, pl. 681

- (1879); *Gigl Ibis*, 1881, p. 222 [Italy, rare]; *Seeböhm, Ibis*, 1883, p. 36 [Caucasus]; *Irby, Ibis*, 1883, p. 190 [Santander]; *Saunders, ed. Yarrell, Brit. B.* iv. p. 128 (1885); *Hartert, Ibis*, 1892, p. 521 [E. Prussia]; *Lilford, Col. Fig. Brit. B.* pt. xxvii. (1893).
- Dytes auritus*, *Ridgw. Bull. U.S. Nat. Mus.* xxi. p. 55 (1881); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 432 (1884); *Agerich. Auk*, ii. p. 289 (1885) [S.E. Dakota]; *Sharpe, Handb. B. Gr. Brit.* iv. p. 201 (1897).
- Podiceps cornutus*, *Coues & Prentiss, Bull. U.S. Nat. Mus.* xxvi. p. 110 (1883) [Columbia Dist.]; *Coues, Key N. Amer. B.* 2nd ed. p. 795 (1884); *Loomis, Auk*, ii. p. 193 (1885) [S. Carolina]; *Seton, Auk*, ii. p. 314 (1885) [Manitoba].
- Podiceps auritus*, *Dixon, Ibis*, 1887, p. 460 [Gairloch: breeds]; *Salvad. Ucc. Ital.* p. 301 (1887); *Saunders, Ill. Man. Brit. B.* p. 705 (1889); *Evans, Ann. Scot. N. H.* i. p. 171 (1892) [Gairloch birds identified with *P. fluvialis*]; *Milais, Ibis*, 1896, p. 455, pl. x. [change of plumage without moult].

*Adult in breeding-plumage.* General colour above black, with greyish margins to the feathers; head and throat black, the feathers on the hinder parts of the head and throat much lengthened and forming a thick frill; a band of hairy buff-coloured feathers on each side of the crown, commencing above the eye; back of the neck dark blackish grey; sides and fore-part of neck, chest, sides, and flanks rich chestnut; lower belly and vent dusky; rest of underparts pure white; primaries and outer secondary quill or quills ash-brown, second and third often partially white, inner quills white, sometimes marked with ash-brown towards the extremity. Iris crimson, a narrow white line surrounding the pupil; eyelid grey; the skin from the eye to the corner of the mandible, the angle of the gape, and the base of the lower mandible red; bill black, light bluish grey tinged with rose at the base of the culmen; tips of both mandibles bluish grey; metatarsi greyish black on the outer side, light bluish grey on the inner side, with slight dusky markings at the joints. Total length about 13·5 inches, culmen from feathers on forehead 0·95–1·05, wing 5·65–5·9, tarsus 1·75, outer toe and claw 2·2.

*Adult in non-breeding plumage.* General colour above including the top of the head, middle of the nape, and back of the neck black, the head with a slight greenish gloss; the feathers of the back with pale greyish-brown margins; upper part of the fore-neck dusky, shading into dark sooty-brown on the sides of the neck; feathers of the sides and flanks tipped with dark ash; chin, throat, sides of nape, and rest of the underparts pure white. Iris blood-red; bill dark horny, pinkish towards the base, paler at the tip; tarsi and feet pearly grey; outer sides of the meta-tarsi, outer toe, and joints blackish.

*A quite young bird* resembles the adult in winter plumage, but the back of the head and neck are dull sooty-brown, and on the white cheeks and sides of the head there are three rather wide and partially interrupted streaks of dark sooty-brown. Culmen 0·8 inch, wing 5·7.

*Hab.* Circumpolar; ranging south in winter to the Mediterranean and Caspian Seas, Japan, and the northern United States.

|                               |                                                               |                                |
|-------------------------------|---------------------------------------------------------------|--------------------------------|
| a. Ad. sk.                    | Iceland.                                                      | Salvin-Godman Coll.            |
| b. ♀ ad. sk.                  | Thorshavn, Faroe Is., May 13<br>( <i>H. C. Müller</i> ).      | Hargitt Coll.                  |
| c-e. Ad. sk. et st.           | Gt. Britain.                                                  | Montagu Coll.                  |
| f. ♂ ad. sk.                  | Meikle Ferry, Dornoch, Morayshire, Dec. 31.                   | J. M. Chadwick, Esq.<br>[P.].  |
| g. ♀ ad. st.                  | Castlegregory, Kerry, S.W. Ireland, Jan. 25.                  | Capt. H. England<br>[P.].      |
| h. ♀ ad. sk.                  | River Dovey, Wales, Jan. 31.                                  | Colonel Morriss [P.].          |
| i. Juv. sk.                   | Devonshire.                                                   | Montagu Coll.                  |
| k. Ad. st.                    | Torquay.                                                      | C. Coningham, Esq.<br>[P.].    |
| l. ♂ ad. sk.                  | Avington, Hants, Oct. 27<br>( <i>G. E. S.</i> ).              | Shelley Coll.                  |
| m. Ad. st.                    | Southend, January.                                            | Purchased.                     |
| n. Ad. st.                    | Woodbridge, Suffolk.                                          | Dr. Theodore Fisher<br>[P.].   |
| o, p. ♂ ♀ ad. sk.             | Wells, Norfolk, Feb. 2 ( <i>P. C. Abel</i> ).                 | Dr. R. Bowdler<br>Sharpe [P.]. |
| q. ♀ ad. sk.                  | Helgeland, Norway, June 29.                                   | Christiania Museum<br>[E.].    |
| r. ♂ ad. sk.                  | Havre, France, Feb. 28 ( <i>V. Pluche</i> ).                  | Hargitt Coll.                  |
| s. Ad. sk.                    | Tunis.                                                        | Salvin-Godman Coll.            |
| t. Ad. sk.                    | Siberia.                                                      | Moscow Museum<br>[P.].         |
| u. ♂ ad. sk.                  | Near Semipalatinsk, May 4<br>( <i>Dr. Brehm</i> ).            | Dr. O. Finsch [E.].            |
| v, w. ♀ ad. sk.               | Amoy, China, Dec., Feb.<br>( <i>R. Swinhoe</i> ).             | Seebohm Coll.                  |
| x, y. ♂ ad. sk.               | Tsu-shima, Feb., March ( <i>P. A. Holst</i> ).                | Seebohm Coll.                  |
| z-c'. ♂ ♀ ad. sk.             | Nagasaki, Nov., Dec., Jan.                                    | F. Ringer, Esq. [P.].          |
| d'-f'. Ad. sk.                | Yokohama ( <i>H. Pryer</i> ).                                 | Seebohm Coll.                  |
| g'. Ad. sk.                   | Hakodadi, Oct.                                                | Capt. T. Blakiston<br>[P.].    |
| h', i'. Ad. sk.               | Hakodadi, Oct. ( <i>T. B.</i> ).                              | Seebohm Coll.                  |
| k'. Ad. sk.                   | North America.                                                | Lord Odo Russell<br>[P.].      |
| l'. Ad. sk.                   | North America.                                                | Hardwicke Bequest.             |
| m'. Ad. sk.                   | North America.                                                | Sir G. Back [P.].              |
| n'. Ad. st.                   | Repulse Bay.                                                  | Dr. Rae [P.].                  |
| o'-q'. ♀ ad. et<br>juv. sk.   | St. Michael's, Alaska, May,<br>Sept. ( <i>E. W. Nelson</i> ). | Salvin-Godman Coll.            |
| r'. ♀ ad. sk.                 | Nulato, Alaska, spring ( <i>E. W. N.</i> ).                   | Salvin-Godman Coll.            |
| s'. Ad. sk.                   | Fort Rupert, Vancouver I.,<br>May 23 ( <i>Dr. Lyall</i> ).    | Voyage of H.M.S.<br>'Plumper.' |
| t'. ♂ imm. sk.                | Salt Spring Island ( <i>Dr. Lyall</i> ).                      |                                |
| u'-x'. ♂ ♀ ad. et<br>juv. sk. | British Columbia.                                             | J. K. Lord, Esq. [P.].         |
| y'. ♀ ad. sk.                 | Washington, D.C., April 17<br>( <i>H. W. Henshaw</i> ).       | Salvin-Godman Coll.            |



|                  |                                                                                     |                                  |
|------------------|-------------------------------------------------------------------------------------|----------------------------------|
| a'. Ad. sk.      | Fort Dufferin, April.                                                               | N. American Boundary Comm. [P.]. |
| a'. ♂ ad. sk.    | Detroit R., Michigan, April 15<br>(W. H. Collins)                                   | Salvin-Godman Coll.              |
| b'. ♂ ad. sk.    | Big Moose Lake, New York,<br>Nov 5 (A. K. Fisher).                                  | Salvin-Godman Coll.              |
| c'. ♂ ad. sk.    | Little Tupper's Lake, New<br>York, Oct. 22 (A. K. F.).                              | Salvin-Godman Coll.              |
| d'-h'. ♂ ad. sk. | New Haven, Connecticut, Feb.<br>April, Oct., Nov. (A. J.<br>Dayan & C. H. Merriam). | Salvin-Godman Coll.              |
| i'. ♀ skeleton.  | Great Britain.                                                                      | Salvin-Godman Coll.              |

### 13. *Podiceps nigricollis*.

- I.a* Grebe à oreilles, *Brisson, Orn.* vi. p. 54 (1760)  
*Colymbus auritus* β, *Linn. S. N.* i. p. 223 (1766).  
 Eared Grebe, *Pennant, Arct. Zool.* ii. p. 499 (1785); *Lath. Gen. Syn.*  
 iii. pt. i. p. 285 (1785); *id. Gen. Hist.* x p. 23 (1824); *Yarrell,*  
*Hist. Brit. B.* iii. p. 319 (1843).  
*Colymbus auritus*, *Gmel. (nec Linn.) S. N.* i. pt. ii. p. 590 (1788);  
*Naum. Nat. Vog. Deutschl.* ix. p. 708, pl. 246 (1838).  
*Podiceps auritus*, *Lath. (nec Linn.) Ind. Orn.* ii. p. 781 (1790); *Meyer*  
*& Wolf, Taschenb.* ii. p. 435 (1810); *Temm. Man. d'Orn.* p. 469  
 (1815); *Vieill. N. Dict. d'Hist. Nat.* xiii. p. 445 (1817); *Temm.*  
*Man. d'Orn.* ed. ii. pt. ii. p. 725 (1820); *Steph. in Shaw's Gen. Zool.*  
 xiii. pt. 1. p. 12 (1826); *Werner, Atl. Ois. d'Eur.* Ord. 14, pl. 10  
 (1828); *Selby, Brit. Orn.* ii. p. 399, pl. lxxiv. fig. 3 (1833); *Schinz,*  
*Nat. Abbild., Vog.* p. 364, pl. 129 (1833); *Nilsen, Skand. Faun.*  
 ii. p. 494 (1835); *Gould, B. Eur.* v. pl. 391 (1837); *Fraser, P. Z. S.*  
 1839, p. 135 [Erzeroum]; *Kornes Skand. Faun.* p. 22, pl. 60 fig. 4  
 (1839-40); *Bonap., Orn. Sicil.* p. 173 (1840); *Donch. Voy. Russ.*  
*Mérid.* iii. p. 304 (1840); *Keys, u. Blas. Wirbelth.* p. 235 (1840);  
*Schwarz, Europ. Faun.* i. p. 354 (1840); *Temm. & Schl. Faun. Jap.*  
 p. 123 (1842); *Cuv., Orn. Sard.* p. 165 (1842); *Bouteille, Orn.*  
*Dauphiné,* ii. p. 228, pl. 59 fig. 4 (1843); *Muhle, Beitr. Orn.*  
*Griechenl.* p. 134 (1844); *G. R. Gray, List of B.* pt. iii. p. 150 (1844);  
*id. Gen. B.* iii. p. 633 (1846); *Degl. Orn. Europ.* ii. p. 505 (1849);  
*Reichenb. Natatours.* pl. 11. nos. 71-73 (1850); *Thomps. Nat.*  
*Hist. Irel.* iii. p. 189 (1851); *Macgill, Brit. B.* v. p. 270 (1852);  
*Kjærboell, Danm. Fugle,* p. 402, pl. xxxix. (1852); *Watters, N. Hist.*  
*B. Irel.* p. 221 (1853); *Hengst. Voy. N.O.-Afr.* p. 68 (1856);  
*Salvin, Ibis,* 1859, p. 364 [El Bahera & Lake Djenleh]; *Swinh.*  
*Ibis,* 1860, p. 67; *Tristram, Ibis,* 1860, p. 82 [N. Salara], p. 159  
 [Lake Halloulah]; *Pourys, Ibis,* 1860, p. 349 [Epirus]; *Hengst. in*  
*Petersen, Geogr. Mitth.* 1861, p. 28 [Suez], p. 311 [Lake Tanieh,  
 Fagan, Egypt. breeds]; *Blakist, Ibis,* 1862, p. 331 [N. Japan];  
*Wright, Ibis,* 1864, p. 157 [Malta]; *Swinh. P. Z. S.* 1863, p. 322  
 [China]; *Tristram, P. Z. S.* 1864, p. 454 [Lake of Galilee]; *Lavard,*  
*B. S. Afr.* p. 374 (1867); *Schl. Mus. Phys.-Bas.* vi. Urinat. p. 40  
 (1867); *Collett, Vid. Selsk. Forh. Christ.* 1868, p. 190; *Blanf. Zool.*  
*Abyss.* p. 410 (1870) Lake Ashangi; *R. Gray, B. West. Scotl.*  
 p. 409 (1871); *Swinh. P. Z. S.* 1871, p. 415 Amoy; winter;  
*Sereitz, Turkest. Jernotue,* p. 69 (1873); *Tacz. Bull. Soc. Z. Fr.*  
 ii. p. 166 (1877) [Poland]; *Bau, etc. J. f. O.* 1877, p. 342 [Germany];  
*Blakist. & Pryer, Ibis,* 1878, p. 211 [Tokio Bay; Yezo]; *Rudolf,*  
*J. f. O.* 1879, p. 83 [Don]; *Radde, Orn. Caucas.* p. 490 (1884).

- Hartwig, Orn.*, 1891, p. 184 [Madeira]; *Gätke, Heligoland, Engl.* ed. p. 587 (1895).
- Podiceps nigricollis*, *Brehm, Handb. Vög. Deutschl.* p. 963 (1831); *Jaubert & Lapomm. Rich. Orn.* p. 497 (1859); *Gould, B. Gr. Brit.* v. pl. 41 (1863); *Degl. & Gerbe, Orn. Europ.* ii. p. 585 (1867); *Whitely, Ibis*, 1867, p. 209 [Hakodadi]; *Gurney, Ibis*, 1868, p. 263 [Transvaal]; *Smith, Ibis*, 1868, p. 457 [Portugal]; *Sharpe, P. Z. S.* 1870, p. 147 [Angola]; *Elwes & Buckl. Ibis*, 1870, p. 341 [Turkey]; *Fritsch, Nat. Vög. Europa's*, p. 503 (1870), *Atl.* pl. 61. figs. 7 & 8 (1871); *G. R. Gray, Hand-l. B.* iii. p. 93 (1871); *Shelley, B. Egypt*, p. 313 (1872); *Fritsch, J. f. O.* 1872, p. 378 [Bohemia]; *Gurney, ed. Anderss. B. Damural.* p. 346 (1872); *Heugl. Orn. N.O.-Afr.* iv. p. 1361 (1873); *Brooke, Ibis*, 1873, p. 349 [Sardinia]; *Swinh. Ibis*, 1874, p. 163 [Hakodadi]; *Irby, Orn. Gibraltar*, p. 220 (1875); *Severtz. J. f. O.* 1875, p. 186 [Tian-shan]; *Danf. & Brown, Ibis*, 1875, p. 434 [Transylvania]; *Wharton, Ibis*, 1876, p. 29 [Corsica]; *Dresser, Ibis*, 1876, p. 414; *Palmén, J. f. O.* 1876, p. 65 [Finland]; *David & Oustal. Ois. Chine*, p. 513 (1877); *Dresser, B. Europe*, viii. p. 651, pl. 632 (1878); *Butler, Cat. B. Sind*, p. 77 (1879); *Bocage, Orn. Angola*, p. 528 (1881); *Seebohm, Ibis*, 1882, p. 231 [Astrakan], p. 369 [Japan]; *Irby, Ibis*, 1883, p. 190 [Santander]; *Sharpe's ed. Layard, B. S. Afr.* p. 786 (1884); *Saunders, ed. Yarrell. Brit. B.* iv. p. 133 (1884); *Tristr. Surv. W. Palest.* p. 139 (1884); *Seebohm, Hist. Brit. B.* iii. p. 465 (1885); *Reid, Ibis*, 1885, p. 255 [Morocco]; *Whitehead, Ibis*, 1885, p. 46 [Corsica]; *Dalla Torre & Tschusi, Orn.*, 1885, p. 556 [Austro-Hungary], 1887, p. 345, 1888, p. 359, & Suppl. p. 331; *Booth, Rough Notes*, iii. pt. xii. (1886); *Gigl. Avif. Ital.* p. 454 (1886); *Tschusi, Orn.*, 1886, p. 174 [local names]; *Gröndal, Orn.*, 1886, p. 368 [Iceland], 1887, p. 501; *Tait, Ibis*, 1887, p. 400 [Portugal]; *Meyer & Helm, Zeit. ges. Orn.* iv. p. 398 (1887); *Gigl. Avif. Ital.* i. p. 668 (1889), ii. p. 659 (1890), iii. p. 515 (1891); *Seebohm, B. Jap.* p. 306 (1890); *Floericke, J. f. O.* 1891, p. 194; *Dresser, Ibis*, 1891, p. 370 [Erzerum]; *Evans, Ibis*, 1891, p. 82 [incubation lasts 21-24 days]; *La Touche, Ibis*, 1892, p. 503 [Foochow & Swatow]; *Hartert, Ibis*, 1892, p. 521 [E. Prussia]; *Lilford, Col. Fig. Brit. B.* pt. xxv. (1893); *Barnes, Ibis*, 1893, p. 174 [Aden]; *Reiser, Orn. Balcanica*, ii. p. 203 (1894), iv. p. 148 (1896).
- Podiceps recurvirostris*, *Brehm, Vogelfang*, p. 402 (1855).
- Dytes nigricollis*, *Ridgw. Bull. U.S. Nat. Mus.* xxi. p. 55 (1881).
- Podiceps cornutus*, *Seebohm (nec Gmel.)*, *Ibis*, 1883, p. 36 [Caucasus].
- Podicipes auritus*, *Coues, Key N. Amer. B.* 2nd ed. p. 796 (1884).
- Colymbus nigricollis*, *Ridgw. Man. N. Am. B.* p. 6 (1887).
- Podicipes nigricollis*, *Saunders, Ill. Man. Brit. B.* p. 707 (1889); *Salrad. Ucc. Ital.* p. 302 (1887); *Blanf. Faun. Brit. Ind.* iv. p. 474 (1898).
- Proctopus nigricollis*, *Sharpe, Handb. B. Gr. Brit.* iv. p. 204 (1897).

*Adult in breeding-plumage.* General colour above, including the head and neck, black with a slight greyish gloss; superciliary feathers, as well as those covering the hinder part of the cheeks and ear-coverts, elongate and hair-like, the former straw-coloured, the two latter chestnut; base of the fore-neck, sides and flanks chestnut; the chest and rest of the underparts pure white; outer primaries ash-brown, obliquely white on the basal portion of the

inner webs; the amount of white gradually increasing on the inner quills, of which the innermost ones are pure white in some examples. Secondaries pure white. Iris crimson, a narrow white ring surrounding the pupil; bill slate-blue to blackish, reddish at the base; legs and feet outwardly black, inwardly leaden blue, dusky green at the joints. Total length about 12 inches, culmen from feathers on forehead 0·85-0·95, wing 5·2-5·3, tarsus 1·6, outer toe and claw 2·1-2·2.

*Adult in non-breeding plumage.* General colour above, including the top of the head, middle of the nape, and back of the neck black, washed with grey; chin, throat, and sides of the nape white; ear-coverts and fore-neck brownish white; sides and flanks white, widely tipped with dark slate; rest of the plumage as in the adult in breeding-plumage.

The black on the chin, throat, sides of the head, and fore-neck, as well as the long feathers of the sides of the head, begin to make their appearance in the end of January and are generally complete by the beginning of March; the change of colour of these parts appears to be entirely due to moult; on the sides and flanks, however, many of the dark-tipped feathers become chestnut by changing colour.

*Hab.* Central and Southern Europe, through Central Asia to China and Japan; Africa.

|                   |                                                    |                               |
|-------------------|----------------------------------------------------|-------------------------------|
| a. Ad. st.        | Cornwall.                                          | Montagu Coll.                 |
| b. ♀ imm. sk.     | Avington, Hants, Oct. 27<br>(G. E. S.).            | Shelley Coll.                 |
| c. Ad. sk.        | Yarmouth, Norfolk.                                 | Old Coll.                     |
| d. Ad. sk.        | Europe.                                            | Gould Coll.                   |
| e, f. ♂ ad. sk.   | Havre, France, March<br>Sept. (V. Pluche)          | Hargitt Coll.                 |
| g. Ad. sk.        | Corsica.                                           | J. Whitehead, Esq.<br>[P].    |
| h. Ad. sk.        | Morocco.                                           | Tweeddale Coll.               |
| i. Ad. sk.        | Mogador                                            | Howard Saunders,<br>Esq. [P]. |
| k. ♀ ad. sk.      | Benguela, S W Africa.<br>Nov 15.                   | J. J. Monteiro, Esq.<br>[C].  |
| l o ♂ ♀ ad. sk.   | El Baheira, Tunis, Mar. 7<br>(O. S.).              | Salvin-Godman Coll.           |
| p. ♀ ad. sk.      | Lake Ashangi, Abyssinia,<br>8000 feet, May 4.      | W. T. Blanford, Esq.<br>[C].  |
| q. ♂ ad. sk.      | Aden, Oct 3 (H. C. Barnes).                        | J. Davidson, Esq.<br>[P].     |
| r, s. ♂ ♀ ad. sk. | Sea of Galilee.                                    | Canon Tristram [C].           |
| t. Ad. sk.        | Muscat, Jan. 31.                                   | Dr. A. J. Javakar [P].        |
| u-y. ♂ ♀ ad. sk.  | Sonniani Bay, Mekran<br>Coast, Feb. 10 (A. O. H.). | Hume Coll.                    |
| z. ♂ ad. sk.      | Pusnee, Mekran Coast,<br>Feb 16 (A. O. H.).        | Hume Coll.                    |
| a'. ♂ ad. sk.     | Semipalatinsk, Siberia,<br>May 4 (Dr. Brehm).      | Dr. O. Finsch [E].            |
| b'. ♂ ad. sk.     | Amoy, China, Jan. 22<br>(R. Steinhoe).             | Seebohm Coll.                 |

|                                   |                                                          |                               |
|-----------------------------------|----------------------------------------------------------|-------------------------------|
| <i>c'</i> . ♀ ad. sk.             | Corea.                                                   | C. W. Campbell, Esq.<br>[P.]. |
| <i>d'-f'</i> . ♂ ♀ ad. sk.        | Hakodadi, Japan, Jan.-<br>April ( <i>T. Blakiston</i> ). | Seebohm Coll.                 |
| <i>g'-s'</i> . Ad. et imm.<br>sk. | Yokohama, winter-sum-<br>mer ( <i>H. Pryer</i> ).        | Seebohm Coll.                 |
| <i>t'-w'</i> . ♂ ♀ ad. sk.        | Nagasaki, Dec. 12.                                       | F. Ringer, Esq. [P.].         |
| <i>x'</i> . ♂ ad. sk.             | Nagasaki, Dec. 10 ( <i>F.</i><br><i>Ringer</i> ).        | Capt. T. Blakiston<br>[P.].   |

14. *Podicipes californicus*.

Eared Dobchick or Grebe, *Nutt. Man. Orn.* p. 256 (1834).

*Podiceps auritus*, *Aud. (nec Linn.) Orn. Biogr.* v. p. 108, pl. 404 (1839); *id. B. Amer.* vii. p. 322, pl. 482 (1844); *Baird, B. N. Amer.* p. 897 (1860); *Ross, Nat. Hist. Rev.* 1862, p. 290 [Mackenzie R.]; *Stejn. Auk*, ii. p. 340 (1885).

*Podiceps californicus*, *Heerm. P. Ac. Philad.* vii. p. 179 (1854) [California]; *Newberry, Rep. Expl. Surr.* vi. pt. iv. p. 110 (1857) [California; Oregon]; *Heerm. P. R. R. Rep.* x. p. 76, pl. 8 (1859); *Baird, B. N. Amer.* p. 896 (1860); *Cooper & Suckl. N. H. Wash. Terr.* p. 282, pl. 8 (1860); *Coues, Proc. Ac. Philad.* 1862, p. 231, 1866, p. 100 [Arizona]; *Sclater, P. Z. S.* 1864, p. 179 [near City of Mexico]; *Dresser, Ibis*, 1866, p. 46 [S. Texas]; *Salvin, Ibis*, 1866, p. 200 [Dueñas]; *Elliot, B. N. Amer.* ii. pl. lxiv. (1869); *Stevenson, Prelim. Rep. U.S. Geol. Surv. Terr.* p. 466 (1871) [Platte R., Wyoming].

*Podiceps auritus*, var. *californicus*, *Coues, Key N. Amer. B.* p. 337 (1872); *id. B. N.-West*, p. 733 (1874); *Ridgw. Ann. Lyc. N. York*, x. p. 392 (1874) [Illinois]; *Henshaw, Am. Nat.* viii. p. 243 (1874) [S. Colorado]; *Snow, Am. Nat.* viii. p. 757 (1874) [Kansas]; *id. Cat. B. Kansas*, ed. 3, p. 14 (1875); *Scott, Bull. Nutt. Orn. C.* iv. p. 96 (1879) [Colorado].

*Dytes nigricollis californicus*, *Ridgw. Bull. U.S. Nat. Mus.* xxi. p. 55 (1881); *Goss, Auk*, i. p. 18 (1884) [habits]; *id. Ornith. & Oölog.* viii. p. 2 [breeding habits]; *Agersb. Auk*, ii. p. 289 (1885) [S.E. Dakota].

*Podicipes auritus californicus*, *Allen & Brewst. Bull. Nutt. Orn. C.* viii. p. 198 (1883) [Colorado]; *Coues, Key N. Amer. B.* 2nd ed. p. 796 (1884).

*Colymbus nigricollis californicus*, *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 434 (1884); *A. O. U. Check-l.* p. 74 (1886); *Evermann, Auk*, iii. p. 88 (1886) [Ventura Co., Cal.]; *Seton, Auk*, iii. p. 147 (1886) [W. Manitoba]; *Ridgw. Man. N. Am. B.* p. 6 (1887); *Mearns, Auk*, vii. p. 50 (1890) [Arizona]; *Hatch, B. Minnesota*, p. 8 (1892); *McIlwraith, B. Ontario*, ed. 2, p. 27 (1894); *Thorne, Auk*, xii. p. 212 (1895) [Montana].

*Colymbus nigricollis*, *Anthony, Auk*, iii. p. 163 (1886) [Oregon].

*Adult in breeding-plumage.* Similar to *P. nigricollis*, but the long hair-like plumes covering the sides of the head and ear-coverts are mostly pale straw-colour, and but slightly tinged with chestnut on the latter; all the primaries and the outermost secondary quill or quills are uniform ash-brown, only the innermost secondaries being pure white. Total length about 11.5 inches, culmen from feathers on forehead 0.9-1, wing 4.9-5.35, tarsus 1.6, outer toe and claw 2.2.

*Adult in non-breeding plumage.* Similar to *P. nigricollis*, but easily distinguished by the absence of white on the base of the primary and outer secondary quills.

*Hab.* Western North America, south in winter to Central America, and east to the Mississippi Valley.

|                          |                                                                   |                                         |
|--------------------------|-------------------------------------------------------------------|-----------------------------------------|
| a. Imm. sk.              | Illinois ( <i>E. W. Nelson</i> ).                                 | Salvin-Godman Coll.                     |
| b. Pull. sk.             | Illinois, June 2.                                                 | Dr. R. Bowdler Sharpe [P.].             |
| c, d. ♂ ad. et imm. sk.  | Souris R., Dakota, Aug. 10 & 24 ( <i>E. Coues</i> ).              | Salvin-Godman Coll.                     |
| e, f. Ad. sk.            | 49th Parallel, June 3.                                            | North-American Boundary Comm. [P.].     |
| g. ♀ ad. sk.             | Nevada, Sept. 12 ( <i>H. Buschhoff</i> ).                         | Salvin-Godman Coll.                     |
| h, i. ♂ ad. et pull. sk. | Cold Springs, Nevada, July 27 ( <i>H. W. Henshaw</i> ).           | Salvin-Godman Coll.                     |
| k. ♀ imm. sk.            | Carson, Nevada, Nov. 6 ( <i>H. W. H.</i> ).                       | Salvin-Godman Coll.                     |
| l. Imm. sk.              | California ( <i>H. Herrick</i> ).                                 | Salvin-Godman Coll.                     |
| m. Ad. sk.               | Lake Tahoe, California, Sept 30 ( <i>H. W. H.</i> ).              | Salvin-Godman Coll.                     |
| n. Ad. sk.               | San Francisco Bay.                                                | Salvin-Godman Coll.                     |
| o. Ad. sk.               | Santa Barbara Islands.                                            | Capt. Kellett & Lieut. Wood, R.N. [P.]. |
| p. Ad. sk.               | Mulege, Lower California, Jan. 16 ( <i>F. Ferrari-Perez</i> ).    | Salvin-Godman Coll.                     |
| q. Imm. sk.              | San Antonio, Texas, Oct 21 ( <i>H. E. Dresser</i> ).              | Salvin-Godman Coll.                     |
| r u. Ad sk et st.        | Mexico.                                                           | Gould Coll.                             |
| v. Ad. sk.               | Mexico ( <i>White</i> ).                                          | Salvin-Godman Coll.                     |
| w. Ad. sk.               | Guaymas, W. Mexico.                                               | Capt. Kellett & Lieut. Wood, R.N. [P.]. |
| x. ♀ ad. sk.             | Atitlan, Guatemala, 5000 ft., Dec 11 ( <i>W. B. Richardson</i> ). | Salvin-Godman Coll.                     |
| y. Ad. sk.               | Cubuleo, Vera Paz, Guatemala ( <i>O. S.</i> ).                    | Salvin-Godman Coll.                     |
| z c'. Ad. et imm. sk.    | Dueñas, Guatemala, Nov. ( <i>O. S.</i> ).                         | Salvin-Godman Coll.                     |

### 15. *Podiceps calipareus*.

- Podiceps calipareus*, Lesson, Voy. Coquille, Zool. i. p. 727 (1826) [Falkland Islands]; *Tsch. Faun. Peru*, Orn. p. 315 (1845); *Sclater*, P. Z. S. 1860, p. 389 [Falkland Is.]; *Abbott*, *Ibis*, 1861, p. 162 [E. Falkland]; *Sclat. & Salvin*, *Exot. Orn.* ii. p. 190 (1869); *id.* P. Z. S. 1869, p. 158 [Tungasuen]; *Thunf. Ibis*, 1877, p. 45 [Chupat R.], 1878, p. 405 [Patagonia]; *Sclater & Salvin*, P. Z. S. 1879, p. 641 [Bolivia]; *White*, P. Z. S. 1883, p. 43 [Argentine Republic]; *Tacz. Orn. Pérou*, iii. p. 493 (1886); *Sclat. & Hudson*, *Argentine Orn.* ii. p. 204 (1889); *Sclater*, P. Z. S. 1891, p. 137 [Tarapacá].
- Podiceps calipareus*, Lesson, Voy. Coquille, Zool. i. pl. 45 (1826) *Gould*, Zool. Voy. Beagle, pt. iii. Birds, p. 136 (1841) [Patagonia; Falkland Is.]; *Fraser*, P. Z. S. 1843, p. 119 [Bay of Valparaiso].

*G. R. Gray, List of B.* pt. iii. p. 150 (1844); *id. Gen. B.* iii. p. 683 (1846); *Gay, Hist. Chili, Zool.* i. p. 464 (1847); *Yarrell, P. Z. S.* 1847, p. 55 [egg]; *Reichenb. Natatores*, pl. 11. nos. 69, 70 (1850); *G. R. Gray, Hand-l. B.* iii. p. 94 (1871); *Tacz. P. Z. S.* 1874, p. 563 [Central Peru].

*Podiceps occipitalis*, *Lesson, Pernety Voy.* pl. xi. *fide*; *Schl. Mus. Pays-Bas*, vi. *Urinat.* p. 41 (1867).

*Podiceps calipareus*, *Lane, Ibis*, 1897, p. 313 [Chili].

**Adult in breeding-plumage.** General colour above dark slate-grey; forehead and crown pale mouse-brown; occiput and nape deep black; superciliary feathers, as well as those covering the cheeks and ear-coverts, dull golden straw-colour and produced into hair-like filaments, which, with the feathers of the crown, form a kind of frill; sides and flanks dark slate; rest of underparts pure shining white, merging gradually into mouse-brown on the throat; primary-quills brownish grey, the innermost five or six margined with white at the tip; secondaries white, with the outer web partially margined or mixed with brownish, almost pure white in the most adult examples. Iris crimson; bill dark horn; legs and feet pale slate (*H. Durnford*). Total length about 10·5 inches, culmen from feathers on forehead 0·75–0·8, wing 5·2–5·5, tarsus 1·65, outer toe and claw 2·2.

**Adult in non-breeding plumage.** Resembles the above, but the long straw-coloured feathers on the sides of the head are entirely wanting.

An *immature* bird is similar to the adult in non-breeding plumage, but the occiput and back of the neck are white with a slight brownish tinge, and the bill is shorter, 0·6 inch.

**Hab.** Central and Southern South America from Central Peru and the Argentine Republic to the Straits of Magellan; Falkland Islands.

|                             |                                                                       |                              |
|-----------------------------|-----------------------------------------------------------------------|------------------------------|
| <i>a.</i> Ad. sk.           | Chili ( <i>Reed</i> ).                                                | Salvin-Godman Coll.          |
| <i>b, c.</i> Ad. sk.        | Chili.                                                                | T. C. Bridges, Esq.<br>[C.]. |
| <i>d-i.</i> Ad. et juv. sk. | Central Chili ( <i>Landbeck</i> ).                                    | Berkeley James Coll.         |
| <i>k.</i> ♂ ad. sk.         | Lake Huasco, Tarapacá,<br>Mar. 3 ( <i>A. A. Lane</i> ).               | Berkeley James Coll.         |
| <i>l.</i> ♂ ad. sk.         | Talcahuano, Chili, Sept.<br>( <i>Dr. Coppinger</i> ).                 | Voyage of H.M.S.<br>'Alert.' |
| <i>m.</i> Imm. sk.          | Straits of Magellan ( <i>Capt.</i><br><i>P. P. King</i> ).            | The Admiralty [P.].          |
| <i>n, o.</i> ♂ ♀ ad. sk.    | Chupat, Patagonia, Nov. 11.                                           | H. Durnford, Esq.<br>[P.].   |
| <i>p, q.</i> Ad. sk.        | Falkland Is.                                                          | Gould Coll.                  |
| <i>r-t.</i> ♂ ♀ ad. sk.     | Falkland Is.                                                          | Antarctic Exp. [P.].         |
| <i>u.</i> Ad. sk.           | Falkland Is. ( <i>Leconte</i> ).                                      | Salvin-Godman Coll.          |
| <i>v, w.</i> ♂ ♀ ad. sk.    | San Salvador Bay, E.<br>Falkland, Aug. 2 ( <i>R.</i><br><i>McC</i> ). | McCormick Bequest.           |
| <i>x.</i> Skeleton.         | [Mexico!]                                                             |                              |
| <i>y.</i> Skeleton.         | Chili.                                                                |                              |
| <i>z.</i> Skeleton.         | Straits of Magellan.                                                  |                              |

Subsp. *a. Podiceps juninensis.*

*Podiceps callipareus juninensis*, *Berlepsch & Stolzmann, Ibis*, 1894, p. 112 [Lake Junin, 17,700 ft., Central Peru]

*Adult in breeding-plumage.* Similar to *P. callipareus*, but with the forehead and crown dark ash, the cheeks and throat pure white, and the auricular tufts glossy brown with a faint golden tinge, as in *P. taczanowskii*.

*Two adult males* (Rothschild Mus.). Culmen from feathers on forehead 0·8 inch, wing 5·3.

*Adult female.* Total length about 11·5 inches, culmen from feathers on forehead 0·6, wing 5·3, tarsus 1·5, outer toe and claw 2·2.

*Hab.* Central and Southern Peru.

*a. ♀ ad. sk.* Lake of Tangua, July 2      Salvin-Godman Coll.  
(*H. Whiteley*).

16. *Podiceps taczanowskii.*

*Podiceps taczanowskii*, *Berlepsch & Stolzmann, Ibis*, 1894, p. 109 [Lake Junin, 17,000 ft., Central Peru].

*Adult in breeding-plumage.* Similar to *P. callipareus*, but distinguished by having a much longer and somewhat broader bill; the metatarsi and toes considerably longer and stouter; the auricular plumes ash-brown instead of golden-straw colour; the crown and fore-part of the head ash-brown, less sharply defined from the blackish occiput and nape; and the wing shorter. Iris red; tarsi and feet greyish olive on the inner side and greyish brown on the outer side. Total length about 11·5 inches, culmen from feathers on forehead 1·15, wing 4·6, tarsus 1·7, outer toe and claw 2·45.

Berlepsch and Stolzmann give the following measurements:—

*Two males.* Total length 14·8–15·2 inches, culmen 1·28–1·32, wing 4·88–5·16, tarsus 1·75–1·8.

*Two females.* Total length 14·4–14·56 inches, culmen 1·15–1·16, wing 4·6–4·96, tarsus 1·68–1·76.

*Hab.* Lake Junin, 17,700 ft., Central Peru.

*a. ♀ ad. sk.* Lake Junin, Central Peru,      Count Branicki [P].  
17,700 ft., May 27 (*T. Kalinowski*).

17. *Podiceps micropterus.*

*Podiceps micropterus*, *Gould, P. Z. S.* 1868, p. 220 [Lake Titicaca, Peru], *G. R. Gray, Hand-l. B. m.* p. 94 (1871).

*Centropus micropterus*, *Sclater & Salvin, Exotic Orn.* ii. p. 189, pl. 95 (1869), *Garman, Bull. Mus. C. Z.* iii. p. 359 (1875) [habits], *Sclater & Salvin, P. Z. S.* 1879, p. 641; *Tacz. Orn. Péron*, iii. p. 497 (1886).

**Adult.** General colour above dark brown, largely mixed with chestnut on the sides of the lower back and rump; the feathers of the back and scapulars rather elongate and pointed, with dark middles, paler margins, and pale sandy tips; feathers of the forehead dull brown, those of the crown and occiput considerably lengthened, and of a rich chestnut colour, tipped with dark brown; feathers of the nape and upper hind-neck similar but shorter; lower part of the hind-neck dull brown; sides of the neck nearly pure chestnut, especially on the upper parts; feathers on the sides of the head behind the eye white, with long narrow black tips; chin, throat, lower part of cheeks, and fore-neck white; lower part of the fore-neck and rest of the underparts dull rufous, fringed with silvery white, producing a mottled appearance, the rufous being most conspicuous on the sides and flanks, where the feathers are blackish towards the extremity, and conspicuously white towards the base; primary-quills brownish-ash, inclining to whitish on the basal half of the inner web; outer secondaries brownish-ash on the outer web, white on the inner web and at the tip; rest of the wing dark brown. The pectination on the hinder margin of the tarsus, especially on the "heel," is very strongly developed, but not more so than in *P. fluviatilis* or *P. rollandi*. Total length about 16 inches, culmen from feathers on forehead 1.25–1.5, wing 4.3–4.6, tarsus 2.05–2.2, outer toe and claw 2.65–2.8.

*Young birds* differ from the adult in having the general colour of the upper parts much paler and mixed with sandy; the back of the neck pale whitish rufous; the chestnut on the top of the head duller and paler, inclining to brownish at the base; the underparts, sides, and flanks white, the outer secondary-quills with the outer as well as the inner webs largely or almost entirely white.

*Hab.* Lake Titicaca, South Peru.

|                             |                                    |                                    |
|-----------------------------|------------------------------------|------------------------------------|
| <i>a.</i> Ad. sk.           | Lake Titicaca, S. Peru, 12,644 ft. | Gould Coll. (Type of the species.) |
| <i>b.</i> Ad. sk.           | Lake Titicaca.                     | Gould Coll.                        |
| <i>c-f.</i> Ad. et imm. sk. | Lake Titicaca.                     | Salvin-Godman Coll.                |

### 18. *Podicipes griseigena*.

? *Colymbus vulgaris*, Scop. *Annus*, i. p. 78 (1769).

Le Jougris, *D'Aubent. Pl. Enl.* ix. pl. 48 [no. 931]; *Buff. Hist. Nat. Ois.* viii. p. 241 (1781).

*Colymbus griseigena*, Bodd. *Tabl. Pl. Enl.* p. 55 (1783); *Bau, etc.*

*J.f.O.* 1877, p. 341 [Germany]; *Baird, Brew. & Ridgw. Water-B.*

*N. Amer.* ii. p. 426 (1884); *Ridgw. Man. N. Am. B.* p. 5 (1887).

*Colymbus subcristatus*, Jacquin, *Beytr. Gesch. Vögel*, p. 37, pl. 18 (1784); *Gmel. S. N.* i. pt. ii. p. 590 (1788).

Red-necked Grebe, *Pennant, Arct. Zool.* ii. p. 499 (1785); *Lath. Gen.*

*Syn.* iii. pt. i. p. 288 (1785); *id. Gen. Syn. Suppl.* i. p. 260,

pl. cxviii. (1787); *id. Gen. Hist.* x. p. 27, pl. 166 (1824); *Yarrell,*

*Hist. Brit. B.* iii. p. 304 (1843).



- Colymbus parotis*, *Sparrm. Mus. Carol.* i. pl. ix. (1786); *Gmel. S. N.* i. pt. ii. p. 592 (1788).
- Podiceps ruficollis*, *Lath. Gen. Syn. Suppl.* i. p. 294 (1787); *Seeböhm, Ibis*, 1883, p. 35 [Caucasus].
- Colymbus rubricollis*, *Gmel. S. N.* i. pt. ii. p. 592 (1788); *Bonnat. Tabl. Encycl. Méth.* i. p. 54, pl. 46, fig. 4 (1790); *Naum. Nat. Vog. Deutschl.* ix. p. 720, pl. 243 (1838).
- Colymbus longirostris*, *Bonnat. Tabl. Encycl. Méth.* i. p. 54 (1790).
- Podiceps rubricollis*, *Lath. Ind. Orn.* ii. p. 783 (1790); *Temm. Man. d'Orn.* p. 465 (1815); *Vieill. N. Dict. d'Hist. Nat.* xiii. p. 444 (1817); *Temm. Man. d'Orn.* ed. ii. pt. ii. p. 720 (1820); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 8 (1826); *Werner, Atl. Ois. d'Eur. Ord.* 14, pl. 6 (1828); *Selby, Brit. Orn.* ii. p. 392, pl. lxxii. (1833); *Atlas Skand. Faun.* ii. p. 487 (1835); *Thompson, P. Z. S.* 1836, p. 79 [Belfast]; *Gould, B. Eur.* v. pl. 389 (1837); *Körner, Skand. Vogl.* p. 22, pl. 60, fig. 2 (1839-46); *Fraser, P. Z. S.* 1839, p. 135 [Erzeroum]; *Démid. Voy. Russ. Mérid.* iii. p. 304 (1840); *Bouteille, Orn. Dauphiné*, ii. p. 225, pl. 59, fig. 2 (1843); *G. R. Gray, List of B.* pt. iii. p. 149 (1844); *Degl. Orn. Europ.* ii. p. 501 (1849); *Reichenb. Natatorea*, pl. 11 nos. 64-68 (1850); *Thomp. Nat. Hist. Irel.* iii. p. 184 (1851); *Macgill, Brit. B.* v. p. 259 (1852); *Kjærhøff, Danm. Fugle*, p. 400, pl. xxxix. (1852); *Watters, N. Hist. B. Irel.* p. 220 (1853); *Sundev. Svensk. Fogl.* pl. 54 fig. 3 (1856); *Jaubert & Lapommi. Rich. Orn.* p. 406 (1859); *Powers, Ibis*, 1860, p. 349 [Butrinto, Epirus]; *Gould, B. Gr. Brit.* v. pl. 39 (1863); *Collett, Vid. Selsk. Forh. Christ* 1868, p. 190; *R. Gray, B. West Scott.* p. 403 (1871); *Severtz. Turkest. Jivotnie*, p. 69 (1873); *Irby, Ibis*, 1873, p. 98 [Tangier]; *Severtz. J. f. O.* 1875, p. 186 [Tian-shan]; *Danf. & Brown, Ibis*, 1875, p. 434 [Transylvania]; *Palmén, J. f. O.* 1876, p. 64 [Finland]; *Eloca, Ibis*, 1880, p. 396 [near Copenhagen breeding]; *Seeböhm, Ibis*, 1882, p. 231 [Astrakan], p. 383 [Arvange]; *Ridde, Orn. Canas* p. 489, 1884; *Seeböhm, Hist. Brit. B.* ii. p. 160 (1885); *Lutken, Orn.* 1885, p. 143, 1886, p. 97 [Denmark]; *Dalla Torre & Tschusi, Orn.* 1885, p. 555 [Austro-Hungary], 1887, p. 31, 1888, p. 359, suppl. p. 331, 1890, p. 261; *Booth, Rough Notes*, iii. pt. xii. 2 pls. (1886); *Tschusi, Orn.* 1886, p. 174 [local names]; *Grondal, Orn.* 1886, p. 368 [Iceland]; *Meyer & Helm, Zeit. ges. Orn.* iv. p. 398 (1887); *Gatke, Helgoland*, Engl. ed. p. 585 (1895).
- Podiceps suberistatus*, *Meyer & Wolf, Taschenb.* ii. p. 429 (1810). *Keys u. Blas. W. chelth.* p. 235 (1840); *Schinz, Europ. Faun.* i. p. 353 (1840); *Hengl. Voy. N O-Afr.* p. 68 (1856); *Fritsch, Nat. Voy. Europa's*, p. 502 (1870), *Atl.* pl. 61 figs. 6, 9 (1871); *Goebel, J. f. O.* 1871, p. 151 [Russia]; *Fritsch, J. f. O.* 1872, p. 378 [Bohemia]; *Tacz. Bull. Soc. Z. Fr.* ii. p. 166 (1877) [Poland]; *Lebe, J. f. O.* 1878, p. 84 [E. Hungary]; *Rudolf, J. f. O.* 1879, p. 83 [Don].
- Colymbus cucullatus*, *Pall. Zoogr. Rosso-As.* ii. p. 355 (1811) [Russia].
- Colymbus naevius*, *Pall. Zoogr. Rosso-As.* ii. p. 356 (1811) [Volga].
- Podiceps megalaëis*, *Brehm, Handb. Vog. Deutschl.* p. 958 (1831).
- Podiceps grisogena*, *G. R. Gray, Gen. B.* iii. p. 633 (1846); *Degl. & Gerbe, Orn. Europ.* ii. p. 579 (1867); *G. R. Gray, Hand-l. B.* iii. p. 93 (1871); *Hengl. Orn. N O-Afr.* iv. p. 1259 (1873); *Dreuer, Ibis*, 1876, p. 414.
- Podiceps grisogena*, *Schl. Mus. Pays-Bas. vi. Urinat.* p. 39 (1867). *Evers & Boel. Ibis*, 1870, p. 341 [Turkey]; *Shelley, B. Egypt.*

p. 313 (1872); *Irby, Orn. Gibraltar*, p. 219 (1875) [Tangier]; *Severtz. J. f. O.* 1875, p. 198 [Tian-shan]; *Dresser, B. Europe*, viii. p. 639, pl. 630 (1878) [part]; *Gigl. Ibis*, 1881, p. 221 [Italy; Elba]; *Clarke, Ibis*, 1884, p. 148 [Slavonia]; *Gigl. Avif. Ital.* p. 452 (1886); *id. Avif. Ital.* i. p. 666 (1889), ii. p. 659 (1890), iii. p. 515 (1891); *Dresser, Ibis*, 1891, p. 370 [Erzeroum]; *Hartert, Ibis*, 1892, p. 521 [E. Prussia]; *Lilford, Col. Fig. Brit. B.* pt. xxvi. (1893); *Reiser, Orn. Balcanica*, ii. p. 203 (1894); *Saunders, ed. Yarrell, Brit. B.* iv. p. 124 (1895).

? *Podiceps cucullatus*, *Severtz. J. f. O.* 1875, p. 198 [Turkestan].

*Podicipes griseigena*, *Salvad. Ucc. Ital.* p. 301 (1887); *Saunders, Ill. Man. Brit. B.* p. 703 (1889).

*Lophæthya griseigena*, *Sharpe, Handb. B. Gr. Brit.* iv. p. 198 (1897).

**Adult in breeding-plumage.** General colour above, including the top of the head and back of the neck, dark brownish black with a grey gloss; the feathers of the crown considerably lengthened and forming a full crest; sides of the head, chin, and throat grey, bordered with white on the sides of the crown and upper part of the neck; sides and fore-part of the neck rich chestnut, becoming somewhat paler on the chest; rest of the underparts silvery white, indistinctly mottled with brownish ash on the upper breast, sides, and flanks; primary-quills ash-brown, outer secondaries mostly or entirely ash-brown; inner secondaries white; the lesser wing-coverts white, forming a white bar along the edge of the wing, widest on the basal half. Iris carmine-red; bill black, the basal portion of the gape yellow; feet externally greenish black, internally dull yellowish, the margins of the lobes dusky. Total length about 18 inches, culmen from feathers on forehead 1·4–1·7, wing 6·3–7·2, tarsus 2·1, outer toe and claw 2·8.

**Adult in non-breeding plumage.** General colour of the upper parts, including the top of the head and back of the neck, brown, darkest on the back and scapulars; sides of the head and base of the fore-neck brownish white; chin, throat, upper part of the fore-neck, and rest of the underparts silvery white; the feathers of the sides of the breast, sides, and flanks mostly tipped with ash-brown; plumage otherwise similar to the above.

**Hab.** Europe and Western Asia, ranging south to the Mediterranean, Black and Caspian Seas, and the north coast of Africa.

|              | Culm. Wing. |     |                          |                     |
|--------------|-------------|-----|--------------------------|---------------------|
|              | in.         | in. |                          |                     |
| a. Ad. sk.   | 1·5         | 6·8 | Europe.                  | Old Coll.           |
| b. Ad. sk.   | 1·65        | 6·5 | Europe.                  | Old Coll.           |
| c. Ad. sk.   | 1·5         | 6·8 | Great Britain.           | Montagu Coll.       |
| d, e. Ad. st |             |     | Yarmouth, Norfolk.       | Gould Coll.         |
| f. Ad. sk.   | 1·55        | 6·4 | Wells, Norfolk, Dec. 28  | Col. H. W. Feilden  |
|              |             |     |                          | [P.]                |
| g. Juv. st.  |             |     | Aldeburgh, Suffolk, Aug. | Dr. Theodore Fisher |
|              |             |     |                          | [P.]                |
| h. Ad. st.   |             |     | Southend, January.       | Old Coll.           |
| i. Ad. sk.   | 1·7         | 6·8 | Torquay.                 | C. Coningham, Esq.  |
|              |             |     |                          | [P.]                |
| k. Imm. sk.  | 1·6         | 6·5 | Abbeville, France.       | M. Baillon [C.]     |

|              | Culm.<br>in. | Wing.<br>in. |                                                    |                                |
|--------------|--------------|--------------|----------------------------------------------------|--------------------------------|
| l. ♀ ad. sk. | 1.4          | 6.3          | Zah-Mesöreg, Asia Minor,<br>May 5 (C. G. Danford). | Seebohn Coll.                  |
| m. ♂ ad. st. |              |              | South Russia, March.                               | Purchased                      |
| n. ♀ ad. sk. | 1.55         | 6.3          | Volga, May (H. F. Muller).                         | Gould Coll.                    |
| o. Ad. sk.   | 1.6          | 6.9          | Archangel (Hencke).                                | Hargitt Coll.                  |
| p. Ad. sk.   | 1.65         | 7.2          | Archangel.                                         | Dr. R. Bowdler<br>Sharpe [P.]. |
| q. Skeleton. |              |              |                                                    |                                |
| r. Sternum.  |              |              |                                                    |                                |

Subsp. a. *Podiceps holboellii*.

*Colymbus cucullatus*, Pull. *Zoogr. Rosso-As.* ii. p. 355 (1811) [part, Siberia].

*Podiceps cristatus*, Swains. & Richards. (nec Linn.) *Faun. Bor.-Amer.* p. 410 (1831) [Saskatchewan]; Cooper & Suckl. *N. H. Wash. Terr.* p. 280 (1860); Baird, *B. N. Amer.* p. 893 (1860) [Washington Territory]; Coues, *P. Essex Inst.* v. p. 310 (1868) [New England]; Turnb. *B. E. Pennsylvania*, p. 49 (1869); Coues, *Key N. Amer. B.* p. 330 (1872); Ridgw. *Ann. Lyc. N. York*, x. p. 392 (1874) [Illinois]; Coues, *B. N.-West*, p. 720 (1874); Merriam, *Bull. Nutt. Orn. C.* ii. p. 47 (1878) [Connecticut]; Brewer, *Bull. Nutt. Orn. C.* ii. p. 52 (1878); Samuels, *N. & E. Birds*, p. 500 (1883) [New England].

*Podiceps rubricollis*, Swains. & Richards. *Faun. Bor.-Amer.* p. 411 (1831) [Gt. Slave Lake]; Aud. *Orn. Biogr.* iii. p. 617, pl. 298 (1835), v. p. 620 (1839); id. *B. Amer.* vii. p. 312, pl. 480 (1844); Swinhoe, *P. Z. S.* 1863, p. 322 [Lakes of N. China; Amoorland; Japan]; Turnb. *B. E. Pennsylvania*, p. 49 (1869); Seebohn, *B. Japan*, p. 344 (1869).

Red-necked Grebe, Nutt. *Man. Orn.* p. 253 (1834) [part].

*Podiceps albae* (Linn.) Jer. Temm. & Schl. *Faun. Jap.* p. 122, pl. 78 B (1842); Reichenb. *Naturores*, pl. 111 B. no. 2940 (1850).

*Podiceps holboellii*, Reichenb. *Vidensk. Meddelelser*, 1853, p. 76 [Greenland]; id. *Ibis*, 1861, p. 14 [Greenland]; Coues, *P. Ac. Philad.* 1862, p. 231; Baird, *Ibis*, 1867, p. 285 [Holland]; Degl. & Gerbe, *Orn. Europ.* ii. p. 581 (1867); Coues, *P. Essex Inst.* v. p. 309 (1869) [New England]; Merriam, *Bull. Nutt. Orn. C.* vi. p. 245 (1881); Ridgw. *Bull. U. S. Nat. Mus.* xxi. p. 55 (1881); Giff. & Sahal. *P. Z. S.* 1887, p. 594 [Corea].

*Podiceps subcristatus*, Schrenck, *Reis. Amur-l.* i. p. 493, pl. 15, fig. 3 (1870); Rautte, *Ost-Sib.* ii. p. 381 (1863).

*Podiceps griseogena*, Baird, *B. N. Amer.* p. 892 (1860) [Hudson's Bay]; Blakist. *Ibis*, 1863, p. 154 [Brit. N. America]; Ross, *Nat. Hist. Rec.* 1862, p. 290 [Mackenzie R.]; Brown, *Ibis*, 1868, p. 427 [Vancouver I.]; Dall & Bann. *Tr. Chicago Acad.* i. p. 308 (1869) [Alaska]; Macquard, *B. E. N. Amer.* p. 495 (1881); Samuels, *N. & E. Birds*, p. 550 (1883).

*Podiceps cornutus*, Linn., in Baird *B. N. Amer.* p. 893 (1860); Coues, *P. Ac. Philad.* 1862, p. 230 [Washington Terr.]; Salvad. *Atti Soc. Ital.* viii. p. 285 (1865); Fensch, *Abh. nat. Ver. Bremen*, iii. p. 75 (1872); Dall *Arif. Alent.* p. 10 (1873).

*Podiceps affinis*, Salvad. *Atti Soc. Ital.* viii. p. 385 (1865) [N. America]; id. *J. f. O.* 1868, p. 70.

*Podiceps subcristatus*, var. *major*, Dybowski, *J. f. O.* 1868, p. 330.

*Podiceps griseigena*, var. *holboëllii*, Coues, *Key N. Amer. B.* p. 396 (1872); *id. B. N.-West*, p. 730 (1874); *Ridgw. Ann. Lyc. N. York*, x. p. 392 (1874) [Illinois].

*Podiceps cucullatus*, Tacz. *J. f. O.* 1874, p. 336 [E. Siberia], 1875, p. 257 [Ussuri], 1876, p. 203; *id. Bull. Soc. Z. Fr.* viii. p. 345 (1883) [Kamschatka].

*Podicipes griseigena holboëlli*, Merriam, *Bull. Nutt. Orn. C.* vii. p. 241 (1882) [Canada]; Coues & Prentiss, *Bull. U.S. Nat. Mus.* xxvi. p. 110 (1883) [Columbia Dist.]; Stearns & Coues, *N. Engl. B.-life*, p. 391 (1883); Coues, *Key N. Amer. B.* 2nd ed. p. 794 (1884); Seton, *Auk*, ii. p. 314 (1885) [Manitoba].

*Podicipes cristatus*, Stearns & Coues, *N. Engl. B.-life*, p. 391 (1883).

*Colymbus holboëllii*, Baird, Brew. & Ridgw. *Water-B. N. Amer.* ii. p. 428 (1884); Stejn. *Bull. U.S. Nat. Mus.* xxix. p. 11 (1885) [E. Siberia; Bering I.], p. 313 [Kamschatka]; A. O. U. *Check-l.* p. 73 (1886); Seton, *Auk*, iii. p. 147 (1886) [W. Manitoba]; *Ridgw. Man. N. Amer. B.* p. 5 (1887); Roberts, *Auk*, vii. p. 213 (1890) [Minnesota]; MacFarl. *P. U.S. Nat. Mus.* xiv. p. 415 (1891) [Fort Anderson, Arctic America]; Stejn. *P. U.S. Nat. Mus.* xv. p. 289 (1892) [Yezo]; Cory, *Cat. W. Ind. B.* p. 81 (1892); Hatch, *B. Minnesota*, p. 5 (1892); McIlhraith, *B. Ontario*, 2nd ed. p. 25 (1894); Merrill, *Auk*, xiv. p. 349 (1897) [Idaho].

*Podiceps occidentalis*, Tristram (*nec Lator.*), *Ibis*, 1887, pp. 98, 262; *Ridgw. Ibis*, 1887, p. 361; Tristram, *Ibis*, 1889, p. 227.

*Adult in breeding-plumage.* Similar to *P. griseigena*, but larger; the bill especially being much stronger. Total length about 19 inches, culmen from feathers on forehead 1·7–2·4, wing 7·2–8·3, tarsus 2·3, outer toe and claw 3·2.

*Adult in non-breeding plumage.* Similar to *P. griseigena*.

*Immature birds*, with the cheeks and sides of the head longitudinally streaked with brownish black, resemble the adult in breeding-plumage in having the sides and fore-part of the neck washed with chestnut, but the chin and throat are white.

*Hab.* Northern parts of North America, ranging east to Greenland and west to Eastern Siberia; south in winter to the Northern United States and Japan.

|               | Culmen. Wing. |     |                                           |                                     |
|---------------|---------------|-----|-------------------------------------------|-------------------------------------|
|               | in.           | in. |                                           |                                     |
| a. Ad. sk.    | 2·2           | 7·7 | Fohkien, China.                           | Gould Coll.                         |
| b. Ad. sk.    | 2·1           | 7·3 | Hakodadi, Japan, Jan. (T. Blakiston).     | Seebohm Coll.                       |
| c. Ad. sk.    | 1·9           | 7·6 | Kotzebue Sound, Alaska (E. W. Nelson).    | Salvin-Godman Coll.                 |
| d. Ad. sk.    | 2·1           | 7·5 | Kotzebue Sound (E. W. N.).                | Salvin-Godman Coll.                 |
| e. ♂ imm. sk. | 2·0           | 8·3 | St. Michael's, Alaska, Oct. 6 (E. W. N.). | Salvin-Godman Coll.                 |
| f. ♂ imm. sk. | 1·9           | 7·5 | St. Michael's, Oct. 7 (E. W. N.).         | Salvin-Godman Coll.                 |
| g. Ad. sk.    | 1·9           | 7·4 | Fort Simpson, June 2.                     | B. R. Ross, Esq. [P.].              |
| h. Imm. sk.   | 2·1           | 7·6 | British Columbia (J. K. Lord).            | North American Boundary Comm. [P.]. |
| i. Imm. sk.   | 1·9           | 7·4 | British Columbia.                         | J. K. Lord, Esq. [P.].              |
| k. Imm. sk.   | 1·7           | 7·2 | British Columbia.                         | J. K. Lord Esq. [P.].               |

|               | Culmen. Wing. |     |                                                             |                        |
|---------------|---------------|-----|-------------------------------------------------------------|------------------------|
|               | in.           | in. |                                                             |                        |
| l. ♂ imm. sk. | 2.0           | 7.4 | Howe Sound, British Columbia, Oct. 24 ( <i>Dr. Lyall</i> ). | Voy. H.M.S. 'Plumper.' |
| m. ♂ imm. sk. | 1.7           | 7.3 | Godbout, Canada, Oct. 25 ( <i>N. A. Comen</i> ).            | Salvin-Godman Coll.    |
| n. ♂ ad. sk.  | 2.2           | 7.7 | Lyons Falls, New York, April 18 ( <i>C. H. Merriam</i> ).   | Salvin-Godman Coll.    |
| o. ♀ ad. sk.  | 2.2           | 7.5 | Lyons Falls, April 18 ( <i>C. H. M.</i> ).                  | Salvin-Godman Coll.    |
| p. ♀ ad. sk.  | 1.0           | 7.2 | Lyons Falls, April 20 ( <i>A. J. Dayan</i> ).               | Salvin-Godman Coll.    |
| q. ♀ ad. sk.  | 1.85          | 7.3 | Lyons Falls, April 23 ( <i>E. L. Dayan</i> ).               | Salvin-Godman Coll.    |

Two specimens in the Rothschild Museum measure as follows:—

|           | Culmen. Wing. |     |                      |
|-----------|---------------|-----|----------------------|
|           | in.           | in. |                      |
| ♂ ad. sk. | 2.0           | 7.3 | Estuary of the Amur. |
| ♀ ad. sk. | 1.9           | 7.4 | Estuary of the Amur. |

A specimen from the Tristram Collection in the Liverpool Museum measures as follows:—

|             | Culmen. Wing. |     |                                                                         |
|-------------|---------------|-----|-------------------------------------------------------------------------|
|             | in.           | in. |                                                                         |
| [♂] ad. sk. | 2.4           | 7.8 | Vancouver Island. ( <i>Cf. Ibis</i> , 1887, pp. 98, 262; 1889, p. 227.) |

### 19. *Podiceps cristatus*.

- La Grèbe, *Brisson, Orn.* vi p. 34, pl. iii. fig. 1 (1760); *D'Aubent Pl. Ent.* ix p. 42 [no. 341]; *Buff. Hist. Nat. Ois.* vii p. 227 (1781).  
 La Grèbe hupée, *Brisson, Orn.* vi p. 38, pl. iv. (1760).  
 La Grèbe cornue, *Brisson, Orn.* vi. p. 45, pl. v. fig. 1 (1760).  
 Greater Dohelnick, *Edw. Glean. N. H.* iii. p. 316, pl. 360. fig. 2 (1762).  
*Colymbus cristatus*, *Linn. S. N.* i. p. 222 (1766); *Gmel. S. N.* i. pt. ii. p. 589 (1788); *Bonnat. Tabl. Encycl. Meth.* i. p. 55 (1790); *Naum. Nat. Vog. Deutschl.* ix. p. 486, pl. 242 (1838); *Bau, etc. J. f. O.* 1877, p. 342 Germany; *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii p. 426 (1884); *Ridgw. Man. N. Am. B.* p. 5 (1887).  
*Colymbus urinator*, *Linn. S. N.* i. p. 223 (1766); *Gmel. S. N.* i. pt. ii. p. 593 (1788); *Bonnat. Tabl. Encycl. Meth.* i. p. 53 (1790).  
 Great Crested Grebe, *Pennant, Brit. Zool.* ii. p. 393 (1768); *id. Arct. Zool.* ii. p. 498 (1785); *Farrell, Hist. Brit. B.* iii. p. 297 (1843).  
 The Grebe, *Pennant, Brit. Zool.* ii p. 395 (1768).  
 Le Grebe hupé, *D'Aubent. Pl. Ent.* ix pl. 44 [no. 944]; *Buff. Hist. Nat. Ois.* viii p. 233 (1781).  
 Le Grebe cornu, *D'Aubent. Pl. Ent.* ix. pl. 45 [no. 400]; *Buff. Hist. Nat. Ois.* viii. p. 235, pl. xix (1781).  
 Crested Grebe, *Lath. Gen. Syn.* iii. pt. i. p. 281 (1785); *id. Gen. Hist.* x p. 20 (1824).  
 Tippet Grebe, *Lath. Gen. Syn.* iii pt. i. p. 283 (1785).  
*Podiceps urinator*, *Lath. Gen. Syn. Suppl.* i p. 294 (1787); *Vieill. N. Dict. d'Hist. Nat.* xiii p. 441 (1817).  
*Podiceps cristatus*, *Lath. Ind. Orn.* ii. p. 780 (1790); *Meyer & Wolf,*

*Taschenb.* ii. p. 426 (1810); *Borckh. etc. Teutsche Orn.* pp. 114, 115 (1800-37); *Temm. Man. d'Orn.* p. 462 (1815); *Vieill. N. Dict. d'Hist. Nat.* xiii. pp. 442, 443 (1817); *Temm. Man. d'Orn.* ed. ii. pt. ii. p. 717 (1820); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 3 (1826); *Werner, Atl. Ois. d'Eur.* (Ord. 14. pl. 5 (1828); *Selby, Brit. Orn.* ii. p. 394, pl. lxxiii. (1833); *Abbott, P. Z. S.* 1834, p. 134 [Trebizond]; *Nilss. Skand. Faun.* ii. p. 484 (1835); *Aud. Orn. Biogr.* iii. p. 595, pl. 292 (1835) [N. America!]; *Gould, B. Eur.* v. pl. 388 (1837); *Fraser, P. Z. S.* 1839, p. 134 [Erzeroum]; *Körner, Skand. Vogl.* p. 22, pl. 60. fig. 1 (1839-46); *Keys. u. Blas. Wirbelth.* p. 235 (1840); *Benoit, Orn. Sicil.* p. 174 (1840); *Demid. Voy. Russ. Mérid.* iii. p. 303 (1840); *Schinz, Europ. Faun.* i. p. 352 (1840); *Cara, Orn. Sard.* p. 165 (1842); *Bouteille, Orn. Dauphiné,* ii. p. 224, pl. 59. fig. 1 (1843); *Mühle, Beitr. Orn. Griechenl.* p. 134 (1844); *Hodgs. in Gray's Zool. Misc.* p. 86 (1844); *id. Icon. ined.* no. 834; *Aud. B. Amer.* vii. p. 303, pl. 479 (1844); *G. R. Gray, List of B.* pt. iii. p. 149 (1844); *id. Cat. Hodgs.* ed. i. p. 147 (1846); *id. Gen. B.* iii. p. 633 (1846); *Degl. Orn. Europ.* ii. p. 493 (1849); *Reichenb. Natatores,* pl. 11. nos. 57-63 (1850); *Thomps. Nat. Hist. Irel.* iii. p. 172 (1851); *Kjærboll. Danm. Fugle,* p. 399, pl. xxxix. (1852); *Macgill. Brit. B.* v. p. 250 (1852); *Watters, N. Hist. B. Irel.* p. 217 (1853); *Sundev. Svensk. Fogl.* pl. 54. figs. 1, 2 (1856); *Brandt in Hoffmann, N. Ural. Exped.* ii. App. p. 71 (1856); *Heugl. Vög. N.O.-Afr.* p. 68 (1856); *Hartl. Syst. Orn. W.-Afr.* p. 249 (1857); *Jaubert et Lapomm. Rich. Orn.* p. 495 (1859); *Salvin, Ibis,* 1859, p. 364 [El Baheira]; *Swinh. Ibis,* 1860, p. 67; *Tristram, Ibis,* 1860, p. 82 [Tuggurt, Sahara], p. 159 [Lake Halloula]; *Powys, Ibis,* 1860, p. 349 [Epirus]; *Irby, Ibis,* 1861, p. 251 [Oudh and Kumaon]; *Swinhoe, P. Z. S.* 1863, p. 322 [China]; *Gould, B. Gr. Brit.* v. pl. 38 (1863); *Fitz. Atl. Nat. Vög.* fig. 339 (1864); *Jerd. B. Ind.* iii. p. 821 (1864); *Wright, Ibis,* 1864, p. 157 [Malta]; *Tristram, P. Z. S.* 1864, p. 454 [Palestine]; *More, Ibis,* 1865, p. 448 [Gt. Britain]; *Layard, B. S. Afr.* p. 373 (1867); *Whitely, Ibis,* 1867, p. 208 [Hakodadi]; *Degl. & Gerbe, Orn. Europ.* ii. p. 577 (1867); *Schl. Mus. Pays-Bas,* vi. Urinat. p. 34 (1867); *Collett, Vid. Selsk. Forh. Christ.* 1868, p. 189; *Ayres, Ibis,* 1869, p. 303 [Transvaal]; *Drake, Ibis,* 1869, p. 154 [Morocco]; *Blanf. Zool. Abyss.* p. 440 (1870) [Lake A-hangi]; *Elwes & Buckl. Ibis,* 1870, p. 341 [Turkey]; *Fritsch, Nat. Vög. Europa's,* p. 501 (1870), *Atl.* pl. 61. figs. 11, 14 (1871); *Finsch, J. f. O.* 1870, p. 379 [New Zealand], 1872, p. 260, 1874, pp. 174, 217; *Travers, Tr. N. Z. Inst.* iii. p. 113 (1871) [habits]; *G. R. Gray, Hand-l. B.* iii. p. 92 (1871); *R. Gray, B. West Scotl.* p. 405 (1871); *Goebel, J. f. O.* 1871, p. 151 [S. Russia]; *Swinhoe, P. Z. S.* 1871, p. 415 [S. coast of China; winter]; *Gurney, ed. Anderss. B. Damaral.* p. 345 (1872); *Fritsch, J. f. O.* 1872, p. 377 [Bohemia]; *Shelley, B. Egypt,* p. 312 (1872); *Hume, Nests & Eggs Ind. B.* p. 645 (1873); *id. Str. F.* i. pp. 142, 265 (1873); *Buller, B. N. Zeal.* p. 353 (1873); *Heugl. Orn. N.O.-Afr.* iv. p. 1357 (1873); *Brooke, Ibis,* 1873, p. 349 [Sardinia]; *Severtz. Turkest. Jevotnie,* p. 70 (1873); *id. J. f. O.* 1873, p. 340 [Tian-shan], 1875, p. 185; *Irby, Orn. Gibraltar,* p. 219 (1875); *Danf. & Brown, Ibis,* 1875, p. 433 [Transylvania]; *Anders. Str. F.* iii. p. 274 (1875); *Jesse, Ibis,* 1876, p. 382 [Corsica]; *Palmén, J. f. O.* 1876, p. 64 [Finland]; *Dresser, Ibis,* 1876, p. 414; *Hume, Str. F.* iv. p. 31 (1876); *Butler, Str. F.* v. pp. 224, 235 (1877); *David & Oustal. Ois. Chine,*

- p. 514 (1877); *Tacz. Bull. Soc. Z. Fr.* ii. p. 106 (1877) [Poland]; *Anderson, P. Z. S.* 1877, p. 807 [N.W. India, breeding]; *Liebe, J. f. O.* 1878, p. 85 [E. Hungary]; *Hume, Str. F.* vii. p. 497 (1878); *Butler, Cat. B. Sind.* p. 76 (1879); *Dresser, B. Europe*, viii. p. 629, pl. 629 (1879); *Brewer, Ibis*, 1879, p. 112 [does not occur in N. America]; *Rudolf, J. f. O.* 1879, p. 83 (Don); *Reid, Str. F.* x. p. 85 (1881); *Buller, Man. B. N. Zool.* p. 74 (1882); *Seebohm, Ibis*, 1882, p. 231 [Astrakan], p. 369 [Japan]; 1883, p. 35 [Caucasus]; *Irby, Ibis*, 1883, p. 190 [Santander]; *Sharpe's ed. Layard, B. S. Afr.* p. 785 (1884); *Radde, Orn. Caucas.* p. 488 (1884); *Triestr. Surv. W. Palest.* p. 138 (1884); *Clarke, Ibis*, 1884, p. 148 [Slavonia and Hungary]; *Ayres, Ibis*, 1885, p. 350 [Transvaal]; *Reid, Ibis*, 1885, p. 255 [Morocco]; *Saunders, ed. Yarrell, Brit. B.* iv. p. 117 (1885); *Booth, Rough Notes*, iii. pt. ix. pl. (1885); *Seebohm, Hist. Brit. B.* iii. p. 455 (1885); *Whitehead, Ibis*, 1885, p. 48 [Corsica]; *Dalla Torre & Tschusi, Orn.* 1885, p. 554 [Austro-Hungary], 1887, p. 343; 1888, p. 358, and Suppl. p. 330; 1890, p. 260; *Lutken, Orn.* 1885, p. 142 [Denmark], 1886, p. 97; *Sharpe, Ibis*, 1886, p. 493 [Fao], p. 499 [Bushire]; *Gigl. Avif. Ital.* p. 450 (1886); *Ritter & Tschusi, Orn.* 1886, p. 174 [local names]; *Tait, Ibis*, 1887, p. 400 [Portugal]; *Meyer & Helm, Zeit. ges. Orn.* iv. p. 397 (1887); *Buller, B. N. Zool.* 2nd ed. p. 293 (1888); *Hume, Str. F.* xi. p. 348 (1888); *Ramsay, Tab. List Austr. B.* p. 22 (1888); *North, Nests & Eggs B. Austr.* p. 347 (1889); *Radde & Walter, Orn.* 1889, p. 128 [Transcaspia]; *Gigl. Avif. Ital.* i. p. 664 (1889), ii. p. 659 (1890), iii. p. 515 (1891); *Seebohm, B. Jap.* p. 365 (1890); *Oates, ed. Hume's Nests & Eggs*, iii. p. 401 (1890); *Dresser, Ibis*, 1891, p. 370 [Erzeroum]; *Lilford, Col. Fig. Brit. B.* pt. xviii. (1891); *Styan, Ibis*, 1891, pp. 331, 509 [Lower Yangtze]; *Evans, Ibis*, 1891, p. 82 [incubation lasts from 21-24 days]; *La Touche, Ibis*, 1892, p. 503 [Tschow]; *Hartert, Ibis*, 1892, p. 521 [E. Prussia]; *Koenig, J. f. O.* 1893, p. 104 [Tunis]; *Seebohm, Ibis*, 1893, p. 53 [Tsu-shima]; *Risser, Orn. Balcanica*, ii. p. 203 (1894), iv. p. 148 (1896); *Gatke, Heligoland, Engl. ed.* p. 585 (1895).
- Colymbus cornutus*, *Bonnat (nec Gmel.) Tabl. Encycl. Méth.* i. p. 55, pl. 40. fig. 1 (1700), *Pallas, Zoogr. Rosso-As.* ii. p. 353 (1811).
- Podiceps cornutus*, *Werner (nec Gmel.) Atl. Ois. d'Eur.* Ord. 14, pls. 8, 9 (1828).
- Podiceps mitratus*, *Brehm, Handb. Vog. Deutschl.* p. 953 (1831).
- Podiceps patagiatus*, *Brehm, Handb. Vog. Deutschl.* p. 954 (1831).
- Crested Grebe or Gaunt, *Nutt Man. Orn.* p. 250 (1834).
- Podiceps australis*, *Gould, P. Z. S.* 1844, p. 135 [Australia, Tasmania]; *id. B. Austr.* vii. pl. 80 (1844); *G. R. Gray, Gen. B.* iii. p. 633 (1846); *Reichenb. Naturales*, pl. 12 no. 937 (1850); *Gould, Handb. B. Austr.* ii. p. 511 (1865); *G. R. Gray, Handb. B.* iii. p. 93 (1871); *Diggles, B. Austr.* ii. pl. 122 (1877).
- Podiceps hectori*, *Buller, Essay N. Z. Orn.* p. 19 (1865); *Finsch, Ibis*, 1869, p. 380; *Buller, Ibis*, 1870, p. 459, *Potts, Tr. N. Z. Inst.* ii. pp. 50, 74, pl. iv. fig. 5 'egg' (1870).
- Podiceps widahmini*, *Goebel, J. f. O.* 1870, p. 312.
- Podiceps rostratus*, *Yarrell fide Mansell-Pleydell, Orn. & Conch. Dorset*, p. 47 (1874).
- Podiceps infuscatiss.*, *Salvad. Ann. Mus. Civ. Genov.* (2) i. pp. 25, 251 (1884) [Shan].
- Podicipes cristatus*, *Salvad. Ucc. Ital.* p. 300 (1887); *Saunders, Ill. Man. Brit. B.* p. 701 (1889); *Sharpe, Second Yark Miss., Aves.* p. 148 (1891); *Blanford Faun. Brit. Ind., Birds*, iv. p. 473 (1898).



*Podicipes infuscatus*, Sharpe, *Ibis*, 1892, p. 545 [Lake Naiwaaha].  
*Lophæthya cristata*, Sharpe, *Handb. B. Gt. Brit.* iv. p. 194  
 (1897).

*Adult in breeding-plumage.* General colour above very dark ash-brown, inclining to blackish; forehead and crown black, with a slight greenish-grey gloss, the feathers on each side of the crown elongate and forming a long double crest; lores, space in front of the eye, cheeks, chin, and throat white more or less tinged with rufous, and shading into rich chestnut on the long feathers covering the hinder parts of the head; the upper neck clad in long black plumes, forming a full ruff; lower part of the hind-neck deep ash-brown; lower part of the fore-neck and rest of the underparts silvery white, except on the sides and flanks, which are rufous chestnut tipped with dark ash or nearly uniform dark ash; *lesser wing-coverts forming a wide white band along the edge of the wing*; primary-quills dark ash, more or less white towards the base of the inner web; outermost secondary partially or entirely dark ash, remainder almost pure white except the last five or six which are dark brownish black; *humeral white*, tipped with rufous or ash towards the extremity. Iris crimson, with a narrow golden ring round the pupil; culmen dusky; sides of upper mandible dull carmine, base of lower mandible carmine, cutting-edges dusky, tip pale horn; inner side of the metatarsus, toes, and lobes pale yellowish brown with a slight greenish tinge; outer side of tarsus, basal phalanx of outer toe, joints, and claws blackish. Total length about 20 inches, culmen from feathers on forehead 1·6–2·1, wing 6·7–8·1, tarsus 2·5–2·6, outer toe and claw 2·9–3·1.

*Adult in non-breeding plumage.* General colour of the upper parts, including the top of the head and hind-neck, dark ash-brown inclining to black; sides and flanks tipped with the same colour; rest of plumage pure white; wings as described above.

*Young.* Similar to the adult in non-breeding plumage, but the head and neck are longitudinally striped and marked with dark ash-brown.

*Young in down.* General colour of the upper parts whitish brown, shading into white on the neck and head, and longitudinally striped with deep smoky-brown; a rather large patch of the latter colour on each side of the crown immediately behind the bare red patch on the forehead; base of the fore-neck and rest of the underparts white.

*Hab.* Central and Southern Europe and Asia as far east as Japan; Africa; Australia; Tasmania; New Zealand.

|                   |                                           |                                |
|-------------------|-------------------------------------------|--------------------------------|
| a. Ad. sk.        | Great Britain.                            | W. Yarrell, Esq. [P.].         |
| b. Pull. sk.      | England.                                  | Gould Coll.                    |
| c. ♀ imm. sk.     | Friskney, Lincolnshire coast,<br>Nov. 23. | Seebohm Coll.                  |
| d, e. ♂ ♀ ad. st. | Leicestershire.                           | Theodore Walker,<br>Esq. [P.]. |
| f, g. ♂ ♀ ad. st. | Norfolk, May.                             | Purchased.                     |
| h. ♂ ad. sk.      | Yarmouth, Norfolk, Nov. 2.                | Col. H. W. Feilden<br>[P.].    |
| i, k. ♂ ♀ ad. sk. | Wells, Norfolk, Feb. 2 (P. C.<br>Able).   | Dr. R. Bowdler Sharpe<br>[P.]. |



|                                 |                                                                  |                               |
|---------------------------------|------------------------------------------------------------------|-------------------------------|
| <i>l.</i> ♀ ad. st.             | Southend, Jan. 24.                                               | Old Coll.                     |
| <i>m.</i> Juv. st.              | Brighton.                                                        | W. C. Whitworth,<br>Esq. [P.] |
| <i>n.</i> Ad. sk.               | Poole Harbour, Dorset, Jan. 10.                                  | Baron A. von Hügel<br>[P.]    |
| <i>o, p.</i> Ad. et imm.<br>sk. | Devonshire.                                                      | Montagu Coll.                 |
| <i>q-s.</i> Ad. st.             | Torquay.                                                         | C. Coningham, Esq.<br>[P.]    |
| <i>t.</i> ♂ ad. st.             | Quillinge, S. Sweden, April.                                     | C. Lundborg [C.]              |
| <i>u.</i> Ad. sk.               | Holland.                                                         | Salvin-Godman Coll.           |
| <i>v.</i> ♂ juv. sk.            | Havre, France, Nov. 27 ( <i>V. Pluché</i> ).                     | Hargitt Coll.                 |
| <i>w.</i> ♂ ad. sk.             | River Volga, May ( <i>H. F. Moeschler</i> ).                     | Hargitt Coll.                 |
| <i>x.</i> Pull. sk.             | Astrachan, July ( <i>A. von Hügel</i> ).                         | Hargitt Coll.                 |
| <i>y.</i> ♂ ad. sk.             | El Baheira, Tunis, March 9<br>( <i>O. S.</i> ).                  | Salvin-Godman Coll.           |
| <i>z.</i> ♂ ad. sk.             | Lake Ashangi, Abyssinia, 8000<br>ft., May 2.                     | W. T. Blanford, Esq.<br>[C.]  |
| <i>z*</i> . Ad. sk.             | Pretoria, Transvaal ( <i>Pratt</i> ).                            | Dr. R. Bowdler<br>Sharpe [P.] |
| <i>z'</i> . ♂ ad. sk.           | Potchefstroom, Sept. 2 ( <i>T. Ayres</i> ).                      | J. H. Gurney, Esq.<br>[P.]    |
| <i>z''</i> . ♂ ad. sk.          | Sea of Galilee.                                                  | Canon H. B. Tristram<br>[C.]  |
| <i>z'</i> . ♀ ad. sk.           | Erzeroum, Asia Minor, Sept. 21<br>( <i>Dickson &amp; Ross</i> ). | Gould Coll.                   |
| <i>z'</i> . Ad. sk.             | Fao.                                                             | W. D. Cumming,<br>Esq. [P.]   |
| <i>z'</i> . Ad. sk.             | Bushira, Jan.                                                    | A. J. V. Palmer,<br>Esq. [P.] |
| <i>z'-g'</i> . Ad. sk.          | Mekran Coast ( <i>Capt Bishop</i> ).                             | Hume Coll.                    |
| <i>h'-m'</i> . ♂ ♀ ad.<br>sk.   | Gwader, Mekran Coast, Jan.,<br>Feb. ( <i>A. O. H.</i> ).         | Hume Coll.                    |
| <i>n'</i> . ♂ ad. sk.           | Pusnee, Mekran Coast, Feb 16<br>( <i>A. O. H.</i> ).             | Hume Coll.                    |
| <i>o'</i> . Ad. sk.             | Kashgar ( <i>Dr. Bellew</i> ).                                   | India Museum [P.]             |
| <i>p', q'</i> . ♂ ♀ ad.<br>sk.  | Ajmere, N W. India, Dec.<br>( <i>A. O. H.</i> ).                 | Hume Coll.                    |
| <i>r' v'</i> . ♂ ♀ ad. sk.      | Gurgaon Dist., Jan. & April<br>( <i>W. N. Chill</i> ).           | Hume Coll.                    |
| <i>n'</i> . ♂ ad. sk.           | Mynpuri, Feb. 1.                                                 | Hume Coll.                    |
| <i>z', y'</i> . ♂ ad. sk.       | Sandee, Futtelgurh Dist.,<br>March 6 ( <i>A. Anderson</i> ).     | Seebohm Coll.                 |
| <i>z'-c''</i> . ♂ ad. sk.       | Alahabad, Nov. 10.                                               | Hume Coll.                    |
| <i>d''</i> . Ad. sk.            | Barcilly, Oudh, Feb.                                             | Hume Coll.                    |
| <i>e''</i> . ♀ ad. sk.          | Zaidam, April ( <i>Prjevalsky</i> ).                             | Seebohm Coll.                 |
| <i>f''</i> . ♂ ad. sk.          | Manipur, Mar. 10 ( <i>A. O. H.</i> ).                            | Hume Coll.                    |
| <i>g''</i> . ♂ ad. sk.          | Irrawaddy River, S. Pegu,<br>Dec. 18 ( <i>E. W. Oates</i> ).     | W. T. Blanford, Esq.<br>[P.]  |
| <i>h'', i''</i> . ♂ ad. sk.     | Amoy, China, April ( <i>R. Swinhoe</i> ).                        | Seebohm Coll.                 |
| <i>k''</i> . ♂ ad. sk.          | Ningpo, China, Dec. 27 ( <i>R. S.</i> ).                         | Seebohm Coll.                 |
| <i>l''</i> . Ad. sk.            | Tsu-shima, Japan, Jan. ( <i>P. A. Holst</i> ).                   | Seebohm Coll.                 |
| <i>m''</i> . Ad. sk.            | Australia.                                                       | Antarctic Exped [P.]          |

|                                               |                                                        |                                   |
|-----------------------------------------------|--------------------------------------------------------|-----------------------------------|
| n". Ad. sk.                                   | Australia.                                             | Purchased.                        |
| o". Ad. sk.                                   | Australia.                                             | Gould Coll.                       |
| p". Ad. sk.                                   | Queensland ( <i>J. T. Cockerell</i> ).                 | Salvin-Godman Coll.               |
| q". Ad. sk.                                   | Bourke, R. Darling, N. S. Wales ( <i>Dr. Peckey</i> ). | Gould Coll.                       |
| r". Ad. sk.                                   | New South Wales.                                       | Australian Museum [P.].           |
| s". Ad. sk.                                   | South Australia.                                       | Dr. R. H. Perks [C.].             |
| t". Ad. sk.                                   | Tasmania.                                              | Gould Coll.                       |
| u". Ad. sk.                                   | New Zealand.                                           | Sir George Grey [P.].             |
| v". Ad. sk.                                   | New Zealand.                                           | Colonial Museum, Wellington [E.]. |
| w", x". ♂ ♀ skeletons.                        | Tring, Hertfordshire, May 13.                          | Hon. W. Rothschild [P.].          |
| y". Skeleton.                                 | Lake of Constance.                                     | Dr. A. Günther [C.].              |
| z". Skeleton.                                 |                                                        |                                   |
| a <sup>3</sup> , b <sup>3</sup> . ♂ ♀ skulls. |                                                        |                                   |
| c <sup>3</sup> . ♂ skull.                     |                                                        | Salvin-Godman Coll.               |
| d <sup>3</sup> , e <sup>3</sup> . Sterna.     |                                                        |                                   |

## 2. ÆCHMOPHORUS.

Type.

*Æchmophorus*, *Coues*, *P. Acad. Philad.* 1862, p. 220. . . *Æ. occidentalis*.

Bill very long, slender and pointed; culmen slightly upturned; secondaries short, the longest equal to the ninth or tenth primary; metatarsus equal to or very little shorter than the middle toe and claw. Nuptial and winter plumages alike.

*Range.* North and South America.

*Key to the Species.*

- I. Chin and throat dark grey; fore-neck chestnut, rest of underparts white; culmen 2·7-3·3 inches, wing 7·3-7·8, outer toe and claw 3·2. . . . . *major* ♂ ♀, p. 549.
- II. Chin, throat, and fore-neck white, like the rest of the underparts.
- A. Size larger: culmen 2·4-3·1 inches, wing 7-8·1, outer toe and claw 3·5. . . . . *occidentalis* ♂, p. 551.
- B. Size smaller: culmen 2·1-2·2 inches, wing 6·4-6·7, outer toe and claw 3·1 . . . . . *occidentalis* ♀, p. 551. (= *clarkii*)

1. *Æchmophorus major*.

- Grebe de Cayenne, *D'Aubent. Pl. Enl.* ix. pl. 46. fig. 1 [no. 404].
- Le Grand Grebe, *Buff. Hist. Nat. Ois.* viii. p. 242 (1781).
- Colymbus major, *Rodd. Tabl. Pl. Enl.* p. 24 (1783) [Cayenne].
- Cayenne Grebe, *Lath. Gen. Syn.* iii. pt. i. p. 284 (1785); *id. Gen. Hist.* x. p. 34 (1824).
- Colymbus cayennensis, *Gmel. S. N.* i. pt. ii. p. 593 (1788); *Bonnat. Tabl. Encycl. Méth.* i. p. 53, pl. 45. fig. 1 (1790).
- Podiceps cayanus, *Lath. Ind. Orn.* ii. p. 781 (1790); *Vieill. N. Dict. d'Hist. Nat.* xiii. p. 443 (1817); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 5 (1826).
- Colymbus bicornis, *Licht. Verz. Doubl.* p. 88 (1823); *G. R. Gray, Gen. B.* iii. p. 633 (1846); *id. Hand-l. B.* iii. p. 93.
- Podiceps leucopterus, *King, Zool. Journ.* iv. p. 101 (1829) [Straits of Magellan]; *Jardine & Selby, Ill. Orn.* pl. 107 (1830); *G. R. Gray,*

- List of B.* pt. iii. p. 149 (1844); *id.* *Gen. B.* iii. p. 633 (1846); *Gay, Hist. Chili, Zool.* i. p. 403 (1847); *Reichenb. Natatores*, pl. 12. nos. 740-741 (1850); *Schl. Handl. Dierk.* i. p. 457, *Atl.* pl. viii. fig. 3 (1857).  
*Podiceps longirostris*, *Bonap. Icon. Faun. Ital.* i. *Ucc. Introd.* p. 1 (1832-41) [Sardinia!]; *Degl. & Gerbe, Orn. Europ.* ii. p. 583 (1867); *Brooke, Ibis*, 1873, p. 349.  
 ? *Podiceps chilensis*, *Fraser (nec Garnot), P. Z. S.* 1843, p. 110 [Chili]; *Farrell, P. Z. S.* 1847, p. 55 [egg].  
*Podiceps major*, *G. R. Gray, Gen. B.* iii. p. 633 (1846); *Schl. Mus. Pays-Bas*, vi. *Urinat.* p. 38 (1867); *Sclat. & Salvén, Erot. Orn.* ii. p. 190 (1869); *id. Ibis*, 1870, p. 500 [Straits of Magellan]; *Tacz. P. Z. S.* 1879, p. 244 [N. Peru]; *Gibson, Ibis*, 1880, p. 164 [Buenos Ayres, breeding-habits]; *Salvén, P. Z. S.* 1883, p. 432 [Chili].  
*Podiceps bicornis*, *Burmeister, Reise La Plata*, ii. p. 520 (1861).  
*Æchmophorus major*, *Dumf. Ibis*, 1876, p. 165 [Banda Oriental & Buenos Ayres], 1878, p. 405 [Patagonia]; *White, P. Z. S.* 1883, p. 433 [Buenos Ayres]; *Barrows, Auk*, i. p. 316 (1884) [Lower Uruguay]; *Tacz. Orn. Pérou*, iii. p. 492 (1886); *Salvad. Ucc. Ital.* p. 300 (1887); *Sclat. & Hudson, Argentine Orn.* ii. p. 202 (1889); *Holland, Ibis*, 1892, p. 213 [Argentine Rep.: breeds in October]; *Lane, Ibis*, 1897, p. 313 [Chili].  
*Colymbus salvadorii*, *Stejn. Bull. U.S. Nat. Mus.* xxix. p. 13 (1885).

*Adult.* General colour above, including the head and back of the neck, brownish black, glossed with dark green, especially on the head and neck; feathers on the occiput and nape lengthened and forming a full short crest; the feathers of the back and scapulars with rather well-marked brownish-white margins; lores, sides of the head, and throat grey, shading into white on the chin and darker grey on the upper part of the fore-neck; sides and fore part of the neck chestnut; an indistinct band of the same colour continued down the sides of the breast to the shoulder; chest and rest of the underparts silvery white except the sides and flanks which are mostly ash-brown, sometimes washed with chestnut; outer primaries ash-brown, whitish on the basal half of the inner web, the white gradually increasing on the innermost quills, which are mostly pure white; secondaries white. Total length about 26 inches, culmen from feathers on forehead 2·8-3·3, wing 2·7-3·3, tarsus 2·6, outer toe and claw 3·2.

*Immature.* Differs from the adult in having the lores, sides of the head, chin, and throat white; the sides and fore part of the neck mostly greyish, tinged with chestnut; the sides of the breast, as well as the sides and flanks, mostly ash-brown, without any trace of chestnut.

*Young in down.* General colour of the upper parts, including the head and neck, black, with rather wide longitudinal white stripes, which become more irregular and broken on the sides of the head and crown, where they form a distinct pattern; chin, throat, breast, and rest of the underparts pure white: a naked patch on the middle of the crown.

*Hab.* Central and Southern parts of South America from Northern Peru, the Argentine Republic, and Uruguay to the Straits of Magellan.

|                | Culmen. | Wing. |                                                                               |                           |
|----------------|---------|-------|-------------------------------------------------------------------------------|---------------------------|
|                | in.     | in.   |                                                                               |                           |
| a. ♀ ad. sk.   | 3·0     | 7·5   | Rio Negro, Brazil, May.                                                       | Salvin-Godman Coll.       |
| b. ♂ ad. sk.   | 2·7     | 7·3   | Chili ( <i>E. C. Reed</i> ).                                                  | Salvin-Godman Coll.       |
| c. Ad. sk.     | 3·05    | 7·5   | Chili.                                                                        | Old Coll.                 |
| d. Ad. sk.     | 3·3     | 7·3   | Central Chili ( <i>Landbeck</i> ).                                            | Berkeley James Coll.      |
| e. Ad. sk.     | 3·1     | 7·4   | Central Chili ( <i>Landbeck</i> ).                                            | Berkeley James Coll.      |
| f. Imm. sk.    | 2·8     | 7·6   | Central Chili ( <i>Landbeck</i> ).                                            | Berkeley James Coll.      |
| g-l. Pull. sk. | ..      | ..    | Central Chili ( <i>Landbeck</i> ).                                            | Berkeley James Coll.      |
| m. ♀ ad. sk.   | 3·0     | 7·8   | Coquimbo Bay, Chili,<br>Nov. ( <i>Admiral A. H.</i><br><i>Markham</i> ).      | Salvin-Godman Coll.       |
| n. Ad. sk.     | 2·8     | 7·5   | Straits of Magellan.                                                          | Old Coll.                 |
| o. Ad. sk.     | 3·2     | 7·8   | Straits of Magellan.                                                          | Old Coll.                 |
| p. ♂ imm. sk.  | 2·8     | 7·7   | Lomas de Zamora, Buenos<br>Ayres, Dec. 11 ( <i>F.</i><br><i>Withington</i> ). | Sclater Coll.             |
| q. Ad. sk.     | 3·3     | 7·5   | Rio Parana, April 16.                                                         | H. Durnford, Esq.<br>[C.] |

2. *Æchmophorus occidentalis*.

*Podiceps occidentalis*, *Lawr. in Baird's B. N. Amer.* p. 894 (1858) [Washington Territory to California]; *Newberry, Rep. Expl. Surr.* vi. pt. iv. p. 110 (1857) [California]; *Cooper & Suckl. N. H. Wash. Terr.* p. 281, pl. 38 (1860); *Brown, Ibis*, 1868, p. 427 [Vancouver I.]; *G. R. Gray, Hand-l. B.* iii. p. 93 (1871); *Coues, Key N. Am. B.* p. 336 (1872); *id. B. N.-West*, p. 727 (1874); *Hensh. Bull. Nutt. Orn. C.* vi. p. 214 (1881); *Bryant, Auk*, ii. p. 313 (1885); *Seton, Auk*, ii. p. 314 (1885), iii. p. 147 (1886) [Manitoba].

*Podiceps clarkii*, *Lawr. in Baird's B. N. Amer.* p. 895 (1860) [California and New Mexico]; *Hensh. Bull. Nutt. Orn. C.* vi. p. 214 (1881); *Bryant, Auk*, ii. p. 313 (1885).

*Æchmophorus occidentalis*, *Coues, Pr. Ac. Philad.* 1862, p. 229; *id. Ibis*, 1866, p. 273 [habits]; *Ridgw. Bull. U.S. Nat. Mus.* xxi. p. 55 (1881); *Coues, Key N. Am. B.* 2nd ed. p. 793 (1884); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 421 (1884); *A. O. U. Check-l.* p. 73 (1886); *Evermann, Auk*, iii. p. 87 (1886) [Ventura Co., Cal.]; *Ridgw. Man. N. A. B.* p. 4 (1887); *Merrill, Auk*, v. p. 140 (1888) [Oregon]; *Snow, Auk*, v. p. 201 (1888) [Kansas]; *Goss, Auk*, vi. p. 122 (1889) [habits]; *Hatch, B. Minnesota*, p. 4 (1892); *Merrill, Auk*, xiv. p. 347 (1897) [Idaho].

*Æchmophorus clarkii*, *Coues, Pr. Ac. Philad.* 1862, pp. 229, 404; *Ridgw. Bull., U.S. Nat. Mus.* xxi. p. 55 (1881); *Coues, Key N. Am. B.* 2nd ed. p. 794 (1884); *Ridgw. Man. N. A. B.* p. 4 (1887).

*Podiceps occidentalis*, var. *clarkii*, *Coues, Key N. Am. B.* p. 336 (1872); *id. B. N.-West*, pp. 727, 728 (1874).

*Æchmophorus occidentalis clarkii*, *Baird, Brew. & Ridgw. Water-B. N. Am.* ii. p. 423 (1884).

*Adult.* General colour above dark brownish black, each feather of the back and scapulars with a pale brownish-white margin; top of the head and hind-neck deep sooty black, darkest on the occiput and nape, where the feathers are somewhat lengthened and form a short crest; lores, sides of the head and neck, chin, throat,

and rest of the underparts pure silvery white, only the sides and flanks tipped with dark ash; outer primaries ash-brown, whitish on the basal half of the inner web, the white gradually increasing on the innermost quills, which are often nearly pure white; secondaries white, more or less widely edged with ash-brown on the outer web and sometimes tipped with the same colour. "Iris bright orange-red with a shade of pink; bill rather bright yellow, culmen and genys more greenish; inside of legs and soles of feet black; outside of tarsus dull bluish green; middle of each web yellowish flesh-colour" (*E. Coues*).

*Adult male.* Total length about 26.5 inches, culmen from feathers on forehead 2.6-3.1, wing 7-8.1, tarsus 3, outer toe and claw 3.5.

*Adult female.* Total length 18.5 inches, culmen from feathers on forehead 2.1-2.2, wing 6.4-6.7, tarsus 2.7, outer toe and claw 3.1.

*Younger examples* appear to differ in having the dark colour of the top of the head continued over the lores and cheeks below the eye.

*Young in down.* General colour of the upper parts uniform dark smoky-grey, the crown and back of the neck pale smoky-grey; rest of the head, neck, and underparts white; a naked triangular patch on the middle of the crown.

*Hab.* Northern and Western States of North America, south to Mexico.

|                 | Culmen Wing.  |               |                                                                          |                                  |
|-----------------|---------------|---------------|--------------------------------------------------------------------------|----------------------------------|
|                 | <sup>in</sup> | <sup>in</sup> |                                                                          |                                  |
| a. Ad. sk.      | 2.6           | 8.1           | British Columbia.                                                        | North American Bound. Comm. [P.] |
| b. Imm. sk.     | 2.6           | 7.9           | British Columbia.                                                        | J. K. Lord, Esq. [P.]            |
| c. Imm. sk.     | 3.0           | 7.8           | British Columbia.                                                        | J. K. Lord, Esq. [P.]            |
| d. ♂ ad. sk.    | 2.9           | 7.8           | Lake Washoe, Nevada, June 2 ( <i>H. G. Parker &amp; H. W. Henshaw</i> ). | Salvin-Godman Coll.              |
| e. ♂ ad. sk.    | 2.7           | 7.2           | Lake Washoe, May 7 ( <i>W. E. Bryant</i> ).                              | Salvin-Godman Coll.              |
| f. Imm. sk.     | 2.4           | 7.2           | Lake Washoe, May 7 ( <i>W. E. B.</i> )                                   | Salvin-Godman Coll.              |
| g. ♂ imm. sk.   | 2.8           | 7.8           | Lake Washoe, May ( <i>W. E. B.</i> )                                     | Salvin-Godman Coll.              |
| h. [♀] imm. sk. | 2.6           | 7.5           | Lake Washoe, May ( <i>W. E. B.</i> )                                     | Salvin-Godman Coll.              |
| i. ♂ imm. sk.   | 4.2           | 7.0           | San Francisco Bay ( <i>F. Gruber</i> ).                                  | Salvin-Godman Coll.              |
| k. ♂ ad. sk.    | 3.1           | 7.4           | Monterey, California, April.                                             | Mr. Alvin Seale [C.]             |
| l. ♂ pull. sk.  | .             | .             | Eagle Lake, California, July 2 ( <i>H. W. H.</i> )                       | Salvin-Godman Coll.              |
| m. Imm. sk.     | 2.2           | 6.4           | Valley of Mexico ( <i>H. S. le Strange</i> )                             | Salvin-Godman Coll.              |
| n. ♀ ad. sk.    | 2.1           | 6.7           | Chapada, State of Jalisco, Mexico, Aug. ( <i>W. B. Richardson</i> )      | Salvin-Godman Coll.              |

Three specimens in the Rothschild Museum measure as follows :—

|               | Culmen.<br>in. | Wing.<br>in. |                                    |
|---------------|----------------|--------------|------------------------------------|
| ♂ imm. sk.    | 2·9            | 7·7          | Alberta Territory, Canada, May 25. |
| ♂ imm. sk.    | 2·6            | 7·4          | Santa Cruz, California, Jan. 1.    |
| ♀ [♂] ad. sk. | 2·9            | 7·3          | California, Sept. 23.              |

## 3. PODILYMBUS.

|                                                                                                         | Type.                 |
|---------------------------------------------------------------------------------------------------------|-----------------------|
| <i>Podilymbus</i> , Lesson, <i>Traité d'Orn.</i> p. 595 (1831) . . . . .                                | <i>P. podicipes</i> . |
| <i>Sylbeocyclus</i> , Bonap. <i>Saggio</i> , p. 86 (1832); <i>Sclater, Ibis</i> , 1874, p. 98 . . . . . | <i>P. podicipes</i> . |
| <i>Hydroka</i> , Nuttall, <i>Man. Orn.</i> p. 259 (1834) . . . . .                                      | <i>P. podicipes</i> . |
| <i>Nexiteles</i> , Gloger, <i>Hand- u. Hilfsb.</i> p. 473 (1842) . . . .                                | <i>P. podicipes</i> . |

Culmen short, deep, and strongly curved downward towards the tip; nostrils broadly oval; frontal feathers bristly; metatarsus about one-third of the length of the middle toe and claw.

*Range.* North and South America.

1. *Podilymbus podicipes*.

*Podicipes minor* rostro vario, *Catesb. Carol.* i. p. 91, pl. 91 (1731) [Carolina].

La Grebe de l'Isle S. Thomas, *Brisson, Orn.* vi. p. 58 (1760) [Island of St. Thomas].

La Grebe de rivière de la Caroline, *Brisson, Orn.* vi. p. 63 (1760).

Le Grebe de la Louisiane, *D'Aubent. Pl. Enl.* ix. pl. 47 (no. 943); *Buff. Hist. Nat. Ois.* viii. p. 240 (1781).

Le Grebe duc-laart, *Buff. Hist. Nat. Ois.* viii. p. 240 (1781).

Le Castagneux à bec cercle, *Buff. Hist. Nat. Ois.* viii. p. 247 (1781).

*Colymbus podiceps*, *Linn. S. N.* i. p. 223 (1766); *Gmel. S. N.* i. pt. ii. p. 594 (1788); *Bonnat. Tabl. Encycl. Méth.* i. p. 57, pl. 45. fig. 4 (1790).

*Colymbus ludovicianus*, *Bodd. Tabl. Pl. Enl.* p. 56 (1783); *Gmel. S. N.* i. pt. ii. p. 592 (1788); *Bonnat. Tabl. Encycl. Méth.* i. p. 54, pl. 46. fig. 2 (1790); *Licht. Verz. Doubl.* p. 88 (1823).

Red-bill Grebe, *Pennant, Arct. Zool.* ii. p. 497, pl. xxii. (1785); *Lath. Gen. Syn.* iii. pt. i. p. 292 (1785); *id. Gen. Hist.* x. p. 35 (1824).

Louisiane Grebe, *Pennant, Arct. Zool.* ii. p. 498 (1785); *Lath. Gen. Syn.* iii. pt. i. p. 289 (1785); *id. Gen. Hist.* x. p. 36 (1824).

Black-breasted Grebe, *Lath. Gen. Syn.* iii. pt. i. p. 289 (1785); *id. Gen. Hist.* x. p. 34 (1824); *Nutt. Man. Orn.* p. 259 (1834).

*Colymbus thomensis*, *Gmel. S. N.* i. pt. ii. p. 592 (1788); *Bonnat. Tabl. Encycl. Méth.* i. p. 54 (1790).

*Podiceps thomensis*, *Lath. Ind. Orn.* ii. p. 784 (1790); *Vieill. N. Dict. d'Hist. Nat.* xiii. p. 446 (1817); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 6 (1826); *G. R. Gray, Gen. B.* iii. p. 633 (1846).

*Podiceps carolinensis*, *Lath. Ind. Orn.* ii. p. 785 (1790); *Vieill. N. Dict. d'Hist. Nat.* xiii. p. 446 (1817); *Vieill. Gal. Ois.* ii. p. 204 (1825); *Spir, Av. Bras.* ii. p. 78, pl. 100 (1825); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 16 (1826); *Sicains. & Richards. Fawn. Bor.-Amer.* p. 412 (1831) [Gt. Slave Lake]; *Aud. Orn. Biogr.* iii. p. 359, pl. 248 (1835), v. p. 624 (1839); *id. B. Amer.* vii. p. 324, pl. 483 (1844).

- Podiceps ludovicianus*, *Lath. Ind. Orn.* ii. p. 785 (1790); *Vieill. N. Dict. d'Hist. Nat.* xiii. p. 447 (1817); *Steph. in Shaw's Gen. Zool.* xii. pt. i. p. 18 (1826).
- Sylboocyclus carolinensis*, *Bonap. Comp. List*, p. 64 (1834); *Gundl. J. f. O.* 1856, p. 431 [Cuba]; *Brewer, P. Bost. Soc. N. H.* vii. p. 308 (1860).
- Colymbus carolinensis*, *D'Orb. in Sagra, Hist. Cuba*, p. 285 (1839).
- Podiceps antarcticus*, *Lesson, Rec. Zool.* 1842, p. 209 [Va'paraino]; *G. R. Gray, Gen. B.* iii. p. 633 (1846); *Gay, Hist. Chili, Zool.* i. p. 465 (1847); *Sclater, P. Z. S.* 1867, p. 337.
- Podilymbus carolinensis*, *G. R. Gray, List of B.* pt. iii. p. 152 (1844); *id. Gen. B.* iii. p. 633 (1846); *Gosse, B. Jamaica*, p. 438 (1847); *More, P. Z. S.* 1859, p. 65 [Lake Peten]; *Léotaud, Ois. Trinidad*, p. 529 (1866).
- Podilymbus brevirostris*, *G. R. Gray, Gen. B.* iii. p. 633 (1846); *Reichenb. Natatores*, pl. 9. no. 2236 (1850).
- Podilymbus brevirostris*, *G. R. Gray, Gen. B.* iii. pl. 172 (1846).
- Podiceps anisodactylus*, *Reichenb. Natatores*, pl. 13. no. 760 (1850).
- Podiceps carolinensis*, *Reichenb. Natatores*, pl. 13. nos. 756-757 (1850); *Jones, Nat. Bermuda*, pp. 50, 87 (1859); *Schl. Mus. Pays-Bas*, vi. *Urinat.* p. 47 (1867); *Turnb. B. E. Pennsylvania*, p. 49 (1869).
- Podilymbus antarcticus*, *Hartl. Naum.* 1853, p. 218; *Sclater, P. Z. S.* 1867, p. 337; *Sclat. & Salvin, P. Z. S.* 1868, p. 177; *G. R. Gray, Hand-l. B.* iii. p. 95 (1871); *Tacz. Orn. Pérou*, iii. p. 498 (1886); *Lane, Ibis*, 1897, p. 314 [Chili].
- Podilymbus lineatus*, *Heerm. P. Ac. Philad.* vii. p. 179 (1854) [California]; *id. P. R. R. Rep.* x. p. 77, pl. 9 [juv.] (1859).
- Podilymbus podiceps*, *Sclat. & Salvin, Ibis*, 1859, p. 234 [Dueñas]; *Cooper & Suckl. N. H. Wash. Terr.* p. 284 (1860); *Baird, B. N. Amer.* p. 898 (1860); *Ross, Nat. Hist. Rev.* 1862, p. 200 [Mackenzie R.]; *March, P. Acad. Philad.* 1864, p. 70 [Jamaica]; *Dresser, Ibis*, 1866, p. 46 [S. Texas]; *Coues, P. Essex Inst.* v. p. 310 (1868) [New England]; *Sclater & Salvin, P. Z. S.* 1869, p. 252 [Lake of Valencia, Venezuela]; *Salvin, P. Z. S.* 1870, p. 219 [Veragua]; *Sclater & Salvin, Ibis*, 1870, p. 500 [Straits of Magellan]; *G. R. Gray, Hand-l. B.* iii. p. 95 (1871); *Maynard, P. Bost. Soc.* xiv. p. 385 (1872) [New Haven]; *Coues, Key N. Am. B.* p. 338 (1872); *Ridgw. Ann. Lyc. N. York*, x. p. 392 (1874); *Coues, B. N.-West*, p. 737 (1874); *Gundl. J. f. O.* 1875, p. 367 [habits]; *Laur. P. U. S. Nat. Mus.* i. p. 488 (1878) [St. Vincent, Grenada]; *Sclater, P. Z. S.* 1879, p. 765 [Montserrat]; *Roberts & Benner, Bull. Nutt. Orn. C.* v. p. 20 (1880) [Minnesota]; *Ridgw. Bull. U. S. Nat. Mus.* xxi. p. 55 (1881); *Maynard, B. E. N. Amer.* p. 496 (1881); *Harting, Zool.* 1881, p. 334 [Weymouth?]; *Sharpe, P. Z. S.* 1881, p. 734 [Radip le near Weymouth]; *Merriam, Bull. Nutt. Orn. C.* vi. p. 235 (1881) [N.E. New York]; *Samuels, N. & E. Birds*, p. 562 (1883); *Goss, Ornithol. & Oolog.* viii. p. 1 (1883) [breeding habit]; *Baird, Breck. & Ridgw. Water-B. N. Amer.* ii. p. 440 (1884); *Reid, Bull. U. S. Nat. Mus.* xxv. p. 277 (1884) [Bermuda]; *Ayersb. Auk*, ii. p. 289 (1885) [S.E. Dakota]; *Seton, Auk*, ii. p. 314 (1885), iii. p. 147 (1886) [Manitoba]; *Goss, Auk*, ii. p. 388 (1885) [Kansas: breeding]; *Evermann, Auk*, iii. p. 88 (1886) [Ventura Co., Cal.]; *Brewst. Auk*, iii. p. 179 (1886) [N. Carolina]; *Scott, Auk*, iii. p. 383 (1886) [Arizona]; *A. O. U. Check-l.* p. 75 (1886); *Ridgw. Man. N. Am. B.* p. 6 (1887); *Goss,*

- Auk*, iv. p. 8 (1887) [Kansas]; *Lloyd, Auk*, iv. p. 184 (1887) [W. Texas]; *Warren, B. Pennsylv.* p. 2 (1888); *Merrill, Auk*, v. p. 140 (1888) [Oregon]; *Cory, Auk*, v. p. 156 (1888); *Chapman, Auk*, v. p. 268 (1888) [Florida]; *Everm. Auk*, v. p. 345 (1888) [Indiana]; *Sclat. & Hudson, Argent. Orn.* ii. p. 208 (1889); *Cory, B. W. Ind.* p. 284 (1889); *Pindar, Auk*, vi. p. 311 (1889) [Kentucky]; *Scott, Auk*, viii. p. 353 (1891) [Jamaica]; *Cory, Cat. W. Ind. B.* p. 81 (1892); *Hatch, B. Minnesota*, p. 8 (1892); *Kerr, Ibis*, 1892, p. 151 [R. Pilcomayo]; *Holland, Ibis*, 1892, p. 214 [Argentine Rep.]; *Scott, Auk*, ix. pp. 211, 214 (1892) [Caloosahatchie, Florida]; *Collette, Tr. Kansas Acad.* xiii. p. 49 (1893) [nesting habits]; *McIlharaith, B. Ontario*, ed. 2, p. 29 (1894); *Merrill, Auk*, xiv. p. 350 (1897) [Idaho].
- Podilymbus* sp., *Salvin, Ibis*, 1866, p. 200 [Lake Atitlan, Guatemala].
- Podilymbus podicipes*, *Merriam, Bull. Nutt. Orn. C.* vii. p. 241 (1882) [Canada]; *Stearns & Coues, N. Engl. B.-life*, p. 393 (1883); *Coues & Prentiss, Bull. U.S. Nat. Mus.* xxvi. p. 110 (1883) [Columbia Distr.]; *Coues, Key N. Amer. B.* 2nd ed. p. 797 (1884); *Sharpe, Handb. B. Gr. Brit.* iv. p. 213 (1897).
- Podilymbus eurytes*, *Bonap. fide G. R. Gray, Hand-l. B.* iii. p. 95 (1871) [Monte Video].

**Adult in breeding-plumage.** General colour above dark brown, inclining to blackish on the crown and back of the neck, paler on the sides of the head and fore part of the neck; in some specimens, probably younger individuals, inclining to whitish on the lower part of the cheeks; chin and throat deep black; feathers of the sides and flanks dark brown, rufous buff towards the base; breast and rest of underparts mottled with black and silvery white, the latter colour generally predominating on the middle of the breast; primary and secondary quills ash, generally inclining to white on the inner web, especially on the inner primaries and secondaries; the amount of white, however, varies greatly in individuals, some examples having only a small spot of white on the margin of the inner web of the secondaries. Iris rich dark brown, with a narrow outer ring of ochraceous white and an inner thread-like ring of pure white; bill milk-white, crossed with a black band across the middle; metatarsi and toes greenish slate-colour on the outer and plumbeous on the inner side.

**Adult male.** Total length about 14 inches; culmen from feathers on forehead 0.75–1; depth of the upper mandible, measured from the feathering on the forehead to the cutting-edge, varies from 0.3 in the younger examples to 0.43 inch in the most adult; wing 5.1–5.6, tarsus 1.6–1.8, outer toe and claw 2.2–2.7.

**Adult female.** Total length about 12 inches; culmen from feathers on forehead 0.7–0.9; depth of the upper mandible, measured from the feathering on the forehead to the cutting-edge, varies from 0.28 in younger examples to 0.35 in the most adult; wing 4.6–5, tarsus 1.35–1.6, outer toe and claw 2.1–2.4.

**Adult in non-breeding plumage.** Differs from the above in having the chin and throat white, the feathers of the fore-neck, sides, and flanks rather widely fringed with rust-red, and the breast and belly mostly pure white.



*Young in down.* General colour above dark brown, longitudinally striped with white; the head and neck handsomely marked with black and white; a chestnut spot in the middle of the crown, and two chestnut bands across the nape; chin, throat, breast, and belly white, shading into greyish brown on the sides and flanks.

*Young birds* resemble the adult in winter plumage, but may be recognized by the dark brown markings on the sides of the head and throat which are characteristic of the young in down, and by the bill which, though as long as that of the adult, is not nearly so deep.

Four adult examples from Lake Atitlan, Guatemala, in the fullest breeding-plumage (apparently three males and a female), differ from any other examples I have examined in having the black of the chin and throat more extended and covering the upper part of the fore-neck. They have, moreover, the crown and back of the neck nearly black, and the cheeks and sides of the head brownish black.

In the large series of birds before me no other example has the black throat-patch extending on to the fore-neck, but an old male from Central Chili has the black on the hind-neck nearly as strongly marked and the sides of the head of nearly as dark a brown. The same remarks apply to an old bird, apparently a female, from Barbados.

I do not believe that the birds from Atitlan represent a distinct form, but am of opinion that the differences in plumage are due to age.

It must be noted that the males of this species are very considerably larger than the females.

*Hab.* The same as that of the genus.

|               | Culmen<br>in. | Wing<br>in. |                                                    |                                     |
|---------------|---------------|-------------|----------------------------------------------------|-------------------------------------|
| a. Pull. sk.  | ..            |             | North America.                                     | Purchased.                          |
| b. Ad. sk.    | 0.7           | 4.7         | 49th Parallel, May 3.                              | North-American<br>Bound. Comm. [P.] |
| c. Ad. sk.    | 0.65          | 4.6         | 40th Parallel, Oct. 3.                             | North-American<br>Bound. Comm. [P.] |
| d. Ad. sk.    | 0.85          | 5.3         | New Brunswick, Sept. 29.                           | Capt. S. G. Reid [P.]               |
| e. ♂ ad. sk.  | 0.85          | 5.2         | New Haven, Connecticut,<br>Sept. 30 (A. J. Dayan). | Salvin-Godman Coll.                 |
| f. ♀ juv. sk. | 0.7           | 4.6         | New Haven, Sept. 25 (A.<br>J. D.).                 | Salvin-Godman Coll.                 |
| g. ♂ ad. sk.  | 0.85          | 5.3         | New Haven, Oct. 11 (A.<br>J. D.).                  | Salvin-Godman Coll.                 |
| h. ♂ ad. sk.  | 0.75          | 5.3         | New Haven, Oct. 11 (A.<br>J. D.).                  | Salvin-Godman Coll.                 |
| i. ♂ juv. sk. | 0.8           | 5.2         | New Haven, Nov. 1 (A.<br>J. D.).                   | Salvin-Godman Coll.                 |
| k. ♂ juv. sk. | 0.85          | 5.2         | Sing Sing, New York,<br>Sept. 16 (C. H. Merriam).  | Salvin-Godman Coll.                 |
| l. Ad. sk.    | 0.7           | 4.8         | Locust Grove, New York,<br>Nov. 26 (C. H. M.).     | Salvin-Godman Coll.                 |
| m. Ad. sk.    | 0.85          | 5.4         | Locust Grove (C. L. Bagg).                         | Salvin-Godman Coll.                 |

|                        | Culmen.<br>in. | Wing.<br>in. |                                                                 |                             |
|------------------------|----------------|--------------|-----------------------------------------------------------------|-----------------------------|
| a-p. Pull. sk.         | ..             | ..           | St. Clair Flats, Michigan<br>( <i>W. H. Collins</i> ).          | Salvin-Godman Coll.         |
| q. ♂ ad. sk.           | 0.8            | 5.1          | Koshkonong Lake, Wis-<br>consin, Nov. 20.                       | Dr. Brewer [P.]             |
| r. ♂ imm. sk.          | 0.85           | 5.4          | Calumet, Illinois, Oct. 31<br>( <i>E. W. Nelson</i> ).          | Salvin-Godman Coll.         |
| s. Imm. sk.            | 0.75           | 4.7          | Calumet, Illinois, Sept. 30<br>( <i>E. W. N.</i> ).             | Salvin-Godman Coll.         |
| t. ♂ ad. sk.           | 0.8            | 5.3          | Cook Co., Illinois, Nov. 10<br>( <i>Greene Smith</i> ).         | Salvin-Godman Coll.         |
| u. Pull. sk.           | ..             | ..           | Mt. Carmel, Illinois, July 23<br>( <i>E. W. N.</i> ).           | Salvin-Godman Coll.         |
| v. ♂ ad. sk.           | 0.85           | 5.4          | Quantico, Virginia, Mar. 30<br>( <i>H. W. Henshaw</i> ).        | Salvin-Godman Coll.         |
| w. Ad. sk.             | 0.8            | 5.15         | Florida.                                                        | W. B. Dismore, Esq.<br>[P.] |
| x. ♂ ad. sk.           | 0.85           | 5.3          | Tarpon Springs, Florida,<br>April 18 ( <i>W. E. D. Scott</i> ). | Salvin-Godman Coll.         |
| y. ♂ [P ♀]<br>ad. sk.  | 0.75           | 4.7          | Lake Borgue, Louisiana,<br>Mar. 1 ( <i>H. W. H.</i> ).          | Salvin-Godman Coll.         |
| z. ♂ ad. sk.           | 0.8            | 5.1          | Lake Borgue, Mar. 1 ( <i>H.</i><br><i>W. H.</i> ).              | Salvin-Godman Coll.         |
| aa. ♂ imm.<br>sk.      | 0.8            | 5.2          | Lake Borgue, Oct. 17 ( <i>H.</i><br><i>W. H.</i> ).             | Salvin-Godman Coll.         |
| bb. ♂ ad. sk.          | 0.85           | 5.6          | Lake Borgue, Dec. 31 ( <i>H.</i><br><i>W. H.</i> ).             | Salvin-Godman Coll.         |
| cc. ♂ ad. sk.          | imp.           | 5.2          | Texas ( <i>F. B. Armstrong</i> ).                               | Salvin-Godman Coll.         |
| dd. ♂ ad. sk.          | 0.8            | 5.2          | Corpus Christi, Texas,<br>Oct. 23 ( <i>F. B. A.</i> ).          | Salvin-Godman Coll.         |
| ee. ♂ [P ♀]<br>ad. sk. | 0.65           | 4.6          | Corpus Christi, Oct. 23<br>( <i>F. B. A.</i> ).                 | Salvin-Godman Coll.         |
| ff. ♂ ad. sk.          | 0.85           | 5.3          | Corpus Christi, Oct. 28<br>( <i>F. B. A.</i> ).                 | Salvin-Godman Coll.         |
| gg. ♂ ad. sk.          | 0.85           | 5.2          | Corpus Christi, Oct. 30<br>( <i>F. B. A.</i> ).                 | Salvin-Godman Coll.         |
| hh. ♂ ad. sk.          | 0.85           | 5.4          | Corpus Christi, Dec. 1<br>( <i>F. B. A.</i> ).                  | Salvin-Godman Coll.         |
| ii. ♀ ad. sk.          | 0.7            | 4.7          | Corpus Christi, Dec. 1<br>( <i>F. B. A.</i> ).                  | Salvin-Godman Coll.         |
| jj. ♀ ad. sk.          | 0.75           | 4.6          | Corpus Christi, Dec. 3<br>( <i>F. B. A.</i> ).                  | Salvin-Godman Coll.         |
| kk. ♀ ad. sk.          | 0.7            | 4.8          | Corpus Christi, Dec 12<br>( <i>F. B. A.</i> ).                  | Salvin-Godman Coll.         |
| ll. Ad. sk.            | 0.8            | 5.4          | California.                                                     | Sir C. Belcher [P.]         |
| mm. ♀ pull.<br>sk.     | ..             | ..           | Eagle Lake, California,<br>July 3 ( <i>H. W. H.</i> ).          | Salvin-Godman Coll.         |
| nn. ♀ ad. sk.          | 0.7            | 4.7          | Matamoros, N.E. Mexico,<br>Aug. 7 ( <i>H. E. Dresser</i> ).     | Salvin-Godman Coll.         |
| oo. Ad. sk.            | 0.85           | 5.2          | Dueñas, Guatemala ( <i>O. S.</i> ).                             | Salvin-Godman Coll.         |
| pp. Ad. sk.            | 0.75           | 4.75         | Dueñas, Guatemala ( <i>O. S.</i> ).                             | Salvin-Godman Coll.         |
| qq. Ad. sk.            | 0.75           | 4.9          | Dueñas, Guatemala ( <i>O. S.</i> ).                             | Salvin-Godman Coll.         |
| rr. Juv. sk.           | 0.75           | 4.9          | Dueñas, Guatemala ( <i>O. S.</i> ).                             | Salvin-Godman Coll.         |
|                        | (in quill)     |              |                                                                 |                             |
| Ad. sk.                | 0.85           | 5.2          | Dueñas, Guatemala ( <i>O. S.</i> ).                             | Salvin-Godman Coll.         |
| Ad. sk.                | 0.85           | 5.3          | Lake Atitlan, Guatemala<br>(5000 ft.) ( <i>O. S.</i> ).         | Salvin-Godman Coll.         |

|                | Culmen.<br>in. | Wing.<br>in. |                                                                        |                             |
|----------------|----------------|--------------|------------------------------------------------------------------------|-----------------------------|
| r'. ♂ ad. sk.  | 0.9            | 5.4          | Lake Atitlan, Guatemala,<br>Sept. 7 (O. S.).                           | Salvin-Godman Coll.         |
| w'. Ad. sk.    | 0.85           | 5.0          | Lake Atitlan, Dec. (W. B.<br><i>Richardson</i> ).                      | Salvin-Godman Coll.         |
| x'. ♀ ad. sk.  | 0.85           | 4.9          | Lake Atitlan, Dec. 12<br>(W. B. R.).                                   | Salvin-Godman Coll.         |
| y'. Ad. sk.    | 0.85           | 4.7          | Castillo, Veragua (E.<br><i>Arce</i> ).                                | Salvin-Godman Coll.         |
| z'. ♂ juv. sk. | 0.85           | 5.1          | Castillo, Veragua (E. A.).                                             | Salvin-Godman Coll.         |
| a''. Ad. sk.   | 0.85           | 5.1          | Bermuda.                                                               | Capt. S. G. Reid [C.].      |
| b''. Ad. sk.   | 0.9            | 5.2          | Bermuda, Dec. 17.                                                      | Capt. S. G. Reid [C.].      |
| c''. Ad. sk.   | 0.9            | 5.15         | Bermuda, Dec. 27.                                                      | Capt. S. G. Reid [C.].      |
| d'. ♀ ad. sk.  | 0.75           | 4.7          | Fermina, near Bemba,<br>Cuba, 100 ft., July (G.<br><i>F. Gaumer</i> ). | Salvin-Godman Coll.         |
| e'. ♀ ad. sk.  | 0.7            | 4.7          | Jamaica (W. Osburn).                                                   | Salvin-Godman Coll.         |
| f''. Ad. sk.   | 0.7            | 4.5          | Jamaica.                                                               | R. S. Redman, Esq.<br>[P.]. |
| g''. Ad. sk.   | 0.85           | 4.8          | Montserrat, West Indies<br>( <i>Sturge</i> ).                          | Salvin-Godman Coll.         |
| h''. ♂ ad. sk. | 0.95           | 5.2          | Grenada, Oct. 10 (D. W.<br><i>Smith</i> ).                             | Salvin-Godman Coll.         |
| i''. Ad. sk.   | 0.85           | 4.6          | Grenada (D. W. S.).                                                    | Salvin-Godman Coll.         |
| k''. Ad. sk.   | 0.7            | 4.5          | Barbados.                                                              | P. H. Gosse, Esq.<br>[C.].  |
| l'. ♂ ad. sk.  | 0.9            | 5.5          | Tambo Lake, Peru, Nov. 4<br>(H. Whiteley).                             | Salvin-Godman Coll.         |
| m''. Ad. st.   |                |              | Chili.                                                                 | T. Bridges, Esq. [C.].      |
| n''. Ad. sk.   | 0.75           | 5.1          |                                                                        |                             |
|                |                |              | (Types of <i>P. brevis</i> , G. R. Gray.)                              |                             |
| o. Ad. sk.     | 0.85           | 5.4          | Central Chili ( <i>Landbeck</i> ).                                     | Berkeley James Coll.        |
| p''. Ad. sk.   | 0.9            | 5.6          | Central Chili ( <i>Landbeck</i> ).                                     | Berkeley James Coll.        |
| q''. Ad. sk.   | 0.75           | 5.0          | Central Chili ( <i>Landbeck</i> ).                                     | Berkeley James Coll.        |
| r''. Ad. sk.   | 1.0            | 5.6          | Central Chili ( <i>Landbeck</i> ).                                     | Berkeley James Coll.        |
| s'. ♂ ad. sk.  | 0.95           | 5.5          | Central Chili, summer (E.<br><i>C. Reed</i> ).                         | Salvin-Godman Coll.         |
| t''. ♂ ad. sk. | 0.9            | in<br>moult. | Rio Bueno, S. Chili, Jan.<br>18 (A. A. Lane).                          | Berkeley James Coll.        |
| u''. ♂ ad. sk. | 0.9            | 5.4          | Laguna Llanquehui, S.<br>Chili, Dec. 6 (A. A. L.).                     | Berkeley James Coll.        |
| v'. ♀ ad. sk.  | 0.85           | 5.0          | Lomas de Zamora, Buenos<br>Ayres (F. Withington).                      | Slater Coll.                |
| w''. ♀ ad. sk. | 0.8            | 4.9          | Quilmes, Aug. 17 (W. H.<br><i>Hudson</i> ).                            | Salvin-Godman Coll.         |
| x''. ♂ ad. sk. | 0.85           | 5.1          | Pelotas, Rio Grande do<br>Sul, Brazil ( <i>Joyner</i> ).               | Salvin-Godman Coll.         |
| y''. ♀ ad. sk. | 0.9            | 4.9          | Sao Paulo, Brazil ( <i>Joyner</i> )                                    | Salvin-Godman Coll.         |
| z'. Ad. sk.    | 0.85           | 4.9          | Bahia, Brazil ( <i>Wucherer</i> ).                                     | Salvin-Godman Coll.         |
| a'. Ad. sk.    | 0.85           | 5.1          | Pará.                                                                  | R. Graham, Esq. [P.].       |

## Order XIX. ALCÆ.\*

(By W. R. OGILVIE-GRANT.)

Skull schizorhinal; schizognathous; nares pervious; vomer free, blade-shaped, and cleft posteriorly; basipterygoid processes vestigial or absent; lachrymal vestigial, fused with nasals; supraorbital grooves deep; temporal fossæ deep; with a well-marked "cerebellar dome"; maxillo-palatines laminate; dentary suture of mandible with a well-defined lower limb. All vertebræ free; hypapophyses of thoracic vertebræ well developed; those of last cervical and 1st and 2nd thoracic bifid; neural spines and transverse processes with long tendinous ossifications; metasternum rounded posteriorly, projecting beyond the posterior lateral processes; corpus sterni greatly elongated; a spina communis lying between the coracoid grooves; furcula with a facet for articulation with the acrocoracoid; pre-ilia separated one from another by the dorsal border of the neural spines of the synsacrum; post-ilia with a more or less extensive flattened dorsal surface separated one from another by the transverse processes of the synsacrum; pre-ilium longer than the post-ilium; ischia produced backwards far beyond the post-ilia; pubes of great length, as long as or longer than the whole ilium; posterior dorsal and ventral ribs of great length, running backwards as far as the free end of the pubes; cnemial crest not greatly produced beyond the level of the articular surface for the femur; tarso-metatarsus not laterally compressed; toes webbed, 3rd toe longest. Nestling nidicolous. [*W. P. Pycraft.*]

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\* The following works refer to the anatomy, osteology, etc. of the group:—Aud. Orn. Biogr. v. p. 627 [anatomy of *U. grylle*], p. 628 [anatomy of *A. torda*] (1839); id. B. Amer. vii. p. 259 (1844) [anatomy of *A. alle*]; Owen, Tr. Zool. Soc. v. pp. 317–335, pls. li., lii. (1865) [osteology of *P. impennis*]; Huxley, P. Z. S. 1867, pp. 430, 455 [skull of *A. torda*]; Garrod, P. Z. S. 1873, p. 34, fig. 1 [skull of *P. impennis*], p. 470 [both carotids present in *A. torda* and *U. troile*, left only in *A. alle*], p. 642 [muscles]; Forbes, P. Z. S. 1877, pp. 307, 310, 314 [*Bursa Fabricii*]; Bureau, Bull. Soc. Z. Fr. ii. pp. 377–399, pl. iv. (1877), iv. p. 28 (1879) [shedding of the sheath of the bill]; Coues, Bull. Nutt. Orn. C. iii. pp. 87–91 (1878); Ridgw. Bull. Nutt. Orn. O. v. pp. 126–128 (1880); Meyer, Abbild. Vogel-Skel. p. 42, pl. liii. (1884), pl. cix (1886) [*U. troile* and *A. torda*]; Lindsay, P. Z. S. 1885, p. 690, fig. 1, & p. 694 [embryonic development of the sternum in *U. troile*]; Sundevall, Ibis, 1886, pp. 389, 456 [wing]; Shufeldt, P. Z. S. 1887, pp. 43–47 [visceral anatomy of *B. marmoratus* and *S. antiquus*]; id. Amer. Nat. p. 777 (1887); Mackay, P. R. Soc. 1888, pp. 394–402; Beddard, P. Z. S. 1888, pp. 252–258 [visceral anatomy of *F. arctica*]; Shufeldt, Auk, v. p. 328 (1888) [osteology of *L. cirrhata*]; id. J. Anat. Phys. xxiii. pp. 1–39, pls. i.–iv. (1888) [osteology of *A. torda* and *P. impennis*], xxiv. pp. 89–116, pls. vi.–viii. (1889) [osteology]; Lucas, Auk, vi. p. 195 (1889) [additional pair of ribs]; Parker, P. Z. S. 1889, p. 170; Beddard, P. Z. S. 1890, p. 439 [anatomy of *U. troile* and *F. arctica*]; id. P. Z. S. 1896, pp. 542–547 [anatomy]; 1897, p. 471 [intercentra].

*Key to the Sub-Families.*

- I. Feathering on the lores extending at least to the posterior border of the nasal opening, which is either exposed or overhung and partially concealed by dense velvety feathers which may extend to the anterior margin . . . . . 1. *ALCINÆ*, p. 560.
- II. Feathering on the lores not extending to the posterior border of the nasal opening, which is overhung by a horny scale . . . . . 2. *FRATERCULINÆ*, [p. 590.]

Subfamily I. *ALCINÆ*.*Key to the Genera.*

- I. Bill deep, greatly compressed and transversely grooved; the outline of the culmen strongly curved downward.
- A. Tail composed of 14 feathers; inter-ramal feathering extending far beyond a vertical line drawn from the anterior border of the nasal opening. Size very large: total length about 90 inches . . . . . 1. *PLAUTUS*, p. 562.
- B. Tail composed of 12 feathers; inter-ramal feathering extending to a vertical line drawn from the anterior border of the nasal opening. Size moderate: total length about 18 inches . . . . . 2. *ALCÆ*, p. 564.
- II. Bill short and stout, culmen rather strongly curved downward, inter-ramal feathering extending far beyond a vertical line drawn from the anterior border of the exposed nasal opening. Tail composed of 12 feathers. Size small: total length about 8.5 inches . . . 5. *ALCÆ*, p. 569.
- III. Bill elongate and moderately compressed; culmen more or less curved downward towards the tip; inter-ramal feathering extending to, or slightly beyond, a vertical line drawn from the anterior border of the nasal opening.
- C. Metatarsus distinctly shorter than the middle toe and claw.
- a. Tail composed of 12 feathers. Lining of the wings pure white . . . . . 4. *URIA* (part), p. 572.

- b.* Tail composed of 14 feathers; lining of the wings mostly grey.
- a'.* Nostrils linear and situated in deep fossæ: size larger; wing 7-7·6 inches . . . . . 4. *URIA* (part), p. 572.
- b'.* Nostrils small and rounded, fossæ very slight: size smaller; wing 5-5·7 inches . . . . . 5. *BRACHYRHAMPHUS*, [p. 590.]
- D.* Metatarsus about equal to the middle toe and claw.
- c.* Tail composed of 12 feathers . . . . . 6. *MICRURIA*, p. 594.
- d.* Tail composed of 14 feathers . . . . . 7. *SYNTHLIBORHAMPHUS*, [p. 595.]

## Subfamily II. FRATERCULINÆ.

### *Key to the Genera.*

- I. Inner claw not different in size and shape from the rest; terminal portion of the upper mandible not transversely grooved.
- A.* Tail composed of 14 feathers; bill moderately long, the length from gape to tip much less than that of the middle toe and claw.
- a.* Breadth of upper mandible at base greater than its depth; culmen rather long and nearly straight; feathering on the lores distant from the posterior margin of the nasal opening by nearly the length of the nasal opening; head and neck devoid of ornamental plumes . . . . . 8. *PTYCHORHAMPHUS*, [p. 599.]
- b.* Breadth of upper mandible at base about equal to its depth; culmen rather short and curved throughout, the ridge rounded; feathering on the lores terminating close to the posterior margin of the nasal opening; head and neck ornamented with plumes . . . . . 9. *SIMORHYNCHUS*, [p. 600.]
- c.* Breadth of upper mandible at base less than its depth; culmen rather short and curved throughout, the ridge forming a blunt razor-edge; lower mandible strongly curved upward throughout and terminating in an acute tip; feathering on the lores distant from the posterior margin of the nasal opening by nearly the length of the nasal opening; sides of the head with ornamental plumes . . . . . 10. *PHALERIS*, p. 607.

- B. Tail composed of 16 (rarely 15) feathers; bill rather long, the length from gape to tip about equal to that of the middle toe and claw; sides of the head and neck with ornamental plumes; during the breeding-season an elevated horn at the base of the culmen ..... 11. CERORHYNCHA, p. 609.
- II. Inner claw much more strongly curved than the rest, bill very deep and much compressed; the breadth of the upper mandible at base much less than the depth; terminal portion transversely grooved, the ridge of the culmen forming a blunt razor-edge. Tail composed of 16 feathers.
- C. Basal outline of the terminal portion of the upper mandible convex; lower mandible without grooves. In the breeding-season a deciduous saddle-shaped shield covers the base of the bill, and on each side of the crown there is a lengthened crest of silky golden feathers ..... 12. LUNDA, p. 611.
- D. Basal outline of the terminal portion of the upper mandible concave or nearly straight and very oblique; terminal portion of lower mandible grooved. In the breeding-season a deciduous nasal shield, widest towards the cutting-edge of the mandible; eyelids with deciduous lorny appendages; no ornamental nuptial crests . 13. FRATERCULA, p. 615

### Subfamily I. ALCINÆ.

#### 1. PLAUTUS.

|                                                                                                                   | Type.                |
|-------------------------------------------------------------------------------------------------------------------|----------------------|
| Plautus, <i>Brunnich, Zool. Fundamenta</i> , p. 78 (1772) .                                                       | <i>P. impennis</i> . |
| Pinguinus, <i>Bonnat. Tabl. Encycl. Meth.</i> i. p. 28 (1790)                                                     | <i>P. impennis</i> . |
| Torda, <i>Duméril, Zool. Analyt.</i> p. 72 (1806) .. ..                                                           | <i>P. impennis</i> . |
| Chenalopex, <i>Viell. lex Moehring, Ar. Gen.</i> p. 65 (1762), <i>N. Dict. d'Hist. Nat.</i> xxiv. p. 132 (1818) . | <i>P. impennis</i> . |
| Mataeoptera, <i>Gloger, Hand- u. Hilfsb.</i> p. 475 (1842) .                                                      | <i>P. impennis</i> . |
| Gyalca, <i>Steenstrup, Naturh. Foren. Vidensk. Meddel.</i> 1855, p. 114 .....                                     | <i>P. impennis</i> . |

Mandibles greatly compressed and transversely grooved, the outline of the culmen strongly curved downward. Inter-ranal feathering extending far beyond a vertical line drawn from the anterior border of the nasal opening, which is linear, and almost entirely concealed by dense feathering extending to the anterior border. Tail composed of 14 feathers. Metatarsus shorter than the middle toe and claw. Size large.

*Range.* Now extinct. Formerly inhabiting the coasts and islands of the North Atlantic south of the Arctic circle.

1. *Plautus impennis*.

Gare-Fowl.

Northern Penguin, *Edwards, Nat. Hist. B.* iii. pl. 147 (1750).

Le Grand Pingoin, *Brisson, Orn.* vi. p. 85, pl. vii. (1760); *D'Aubent. Pl. Enl.* x. pl. 55 [no. 367].

*Alca impennis*, *Linn. S. N.* i. p. 210 (1766); *Gmel. S. N.* i. pt. ii. p. 550 (1788); *Lath. Ind. Orn.* ii. p. 791 (1790); *Temm. Man. d'Orn.* ed. 2, pt. ii. p. 939 (1820), pt. iv. p. 582 (1840); *Meyer, Appendix to Meyer & Wolf, Taschenb. der Deutschl.* i. p. 176 (1822); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 51 (1826); *Werner, Atl. Ois. d'Eur.* p. 103 (1828); *Schinz, Nat. Abbild. Vög.* p. 375, pl. 131 (1833); *Nutt. Man. Orn.* p. 553 (1834); *Thompson, P. Z. S.* 1835, p. 79 [Waterford]; *Blyth, P. Z. S.* 1837, p. 122 [remarks on the osteology]; *Gould, B. Eur.* v. pl. 400 (1837); *Aud. Orn. Biogr.* iv. p. 316, pl. ccxli. (1838); *Keys. u. Blas. Wirbelth.* p. 236 (1840); *Schinz, Europ. Faun.* i. p. 363 (1840); *Naum. Nat. Vög. Deutschl.* xii. p. 630, pl. 337 (1844); *G. R. Gray, List of B.* pt. iii. p. 153 (1844); *Aud. B. Amer.* vii. p. 245, pl. cccclxv. (1844); *G. R. Gray, Gen. B.* iii. p. 637 (1847); *Degl. Orn. Europ.* ii. p. 528 (1849); *Reichenb. Natatores*, pl. v. figs. 14-17 (1850); *Thomps. Nat. Hist. Irel.* iii. p. 233 (1851); *Macgill. Brit. B.* v. p. 359 (1852); *Kjærboll. Danm. Fugle*, p. 414, pl. liii. fig. 2 (1852); *Watters, N. Hist. B. Irel.* p. 230 (1853); *Schinz, Nat. Vög.* p. 223, pl. 103 (1853); *Baird, B. N. Amer.* p. 900 (1858); *Newton, Ibis*, 1861, p. 374 [Iceland]; *id. P. Z. S.* 1863, pp. 435-438; *Fitz. Atl. Nat. Vög.* fig. 346 (1864); *More, Ibis*, 1865, p. 450 [St. Kilda; Orkney Is.]; *Newton, Ibis*, 1865, p. 116, 1866, p. 223; *Schl. Mus. Pays-Bas*, vi. *Urinat.* p. 13 (1867); *Degl. & Gerbe, Orn. Europ.* ii. p. 614 (1867); *Dubois, Arch. Cosmol.* 1867, p. 30, pl. 3; *Brown, P. Z. S.* 1868, p. 361 [Greenland?]; *Coues, P. Ac. Philad.* 1868, p. 15; *Fatio, Bull. Soc. Orn. Suisse*, ii. pt. i. pp. 5-85, pl. 1 (1868), pt. ii. pp. 147-157 (1870); *Collett, Forh. Vid. Selsk. Christ.* 1868, p. 193; *Brant, Mélang. Biol.* vii. p. 203 (1869); *Feilden, Ibis*, 1869, p. 358 [eggs]; *Newton, Ibis*, 1870, p. 256; *Fritsch, Nat. Vög. Europa's*, p. 490 (1870), *Atl.* pl. 59. figs. 8, 9 (1871); *R. Gray, B. W. Scotl.* p. 441 (1871); *Potts, Tr. N. Zeal. Inst.* iii. p. 109 (1871); *Coues, Key N. Amer. B.* p. 339 (1872); *Gould, B. Gt. Britain*, v. pl. 46 (1873); *Garrod, P. Z. S.* 1873, p. 34, fig. 1 [skull]; *Allen, Bull. Nutt. Orn. C.* i. p. 58 (1876); *Dresser, B. Europe*, viii. p. 563, pl. 620 (1880); *Cory, Beaut. Birds*, pt. ii. pl. v. (1881); *Grieve, J. Linn. Soc.* xvi. p. 479 (1882); *Blasius, Jahresb. Ver. Nat. Braunschweig*, iii. p. 89 (1883); *Collett, MT. Orn. Ver. Wien*, viii. pp. 65, 87 (1884); *Coues, Key N. Amer. B.* 2nd ed. p. 819 (1884); *Blasius, J. f. O.* 1884, p. 58; *Sunder. Svensk. Fögl.* p. 994, pl. lxxx. fig. 2 (1885); *Seebohm, Hist. Brit. B.* iii. p. 371 (1885); *Dixon, Ibis*, 1885, p. 90 [St. Kilda]; *Saunders, ed. Yarrell's Hist. Brit. B.* iv. p. 61 (1885); *Tschusi u. Dalla-Torre, Orn.* 1887, p. 342 [Austro-Hungary]; *Gröndal, Orn.* 1887, p. 593; *Lucas, Rep. U.S. Nat. Mus.* 1887-8, p. 493, pls. lxxi.-lxxiii.; *id. Rep. Nat. Mus. Washington*, 1888-89, p. 709; *Saunders, Ill. Man. Brit. B.* p. 681 (1889); *Lilford, Col. Fig. Brit. B.* pt. xviii. (1891); *Sclater, Ibis*, 1891, p. 281, 1892, p. 453.

Great Auk, *Pennant, Brit. Zool.* ii. p. 507, pl. lxxxi. (1776) [St. Kilda]; *id. Arct. Zool.* ii. p. 509 (1785); *Lath. Gen. Syn.* iii. pt. i. p. 311 (1785); *id. Gen. Hist.* x. p. 55 (1824); *Steph. in*



- Shaw's Gen. Zool.* xiii. pt. i. p. 61, pl. iv. (1826); *Selby, Ill. Brit. Orn.* ii. pl. lxxxii. (1834); *Yarrell, Hist. Brit. B.* iii. p. 369 (1843); *Grieve, "The Great Auk or Garefowl,"* pp. 1-141. App. 1-58, 4 pls., woodcuts (1885); *Lucas, Auk*, v. p. 278 (1888); *Hardy, Auk*, v. p. 380 (1888).
- Le Grand Pingouin, *Buff. Hist. Nat. Ois.* ix. p. 393 (1783).
- Pinguinus impennis*, *Bonnat. Tabl. Encycl. Méth.* i. p. 29, pl. x. fig. 2 (1790).
- Pinguin impennis*, *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo, Didot), *Quadr.* xiv. p. 313 (1799).
- Alca borealis*, *Forst. Synopt. Cat. Brit. B.* p. 29 (1817).
- Alca major*, *Merrem (c.c. Brisson) in Ersch u. Gruber, Encycl.* ii. p. 407 (1819).
- Auk*, *Mont. Orn. Dict.* 2nd ed. p. 12 (1831).
- Plautus impennis*, *Steenstrup, Naturh. Foren. Vidensk. Meddel.* pp. 33-116 (1855); *Preyer, J. f. O.* 1862, pp. 110, 337; *Baird, Brew & Ridgw. Water-B. N. Amer.* ii. p. 467 (1884); *A. O. U. Check-l.* p. 84 (1886); *Ridgw. Man. N. Am. B.* p. 19 (1887); *Sharpe, Handb. B. Gr. Brit.* iv. p. 111, pl. cv. (1897).
- Chenalopex impennis*, *G. R. Gray, Hand-l. B.* iii. p. 95 (1871).

*Adult in breeding-plumage.* Head, neck, and upper parts black, with a greyish gloss shading into deep sooty-brown on the sides of the head, chin, throat, and fore-neck; a large oval patch in front of the eye, the tips of the secondaries, and the rest of the underparts pure white; the white extending upwards and terminating in a point in the middle of the fore-neck; under surface of the wings smoky-grey; quills and tail black, the latter composed of 14 feathers. "Iris hazel; bill black, with the grooves between the transverse ridges white; feet and claws black" (*J. J. Audubon*). Total length about 30 inches, culmen from feathers on forehead to tip 3.3-3.5, from gape to tip 4.35-4.4, greatest depth of both mandibles at base 1.5-1.65, wing 5.9-6.4, tail 3.1, tarsus 1.9-2.2, middle toe and claw 3.15-3.45.

*Adult in non-breeding plumage.* Appears to have the chin, throat, and sides of the occiput white; a dusky band commencing behind the eye and bordering the sides of the throat; otherwise the plumage resembles the above, the white patch in front of the eye being present.

*Hab.* The same as that of the genus.

|                     |                                        |                              |
|---------------------|----------------------------------------|------------------------------|
| a. Ad. st.          | Labrador, summer.                      | Lidth de Jeude Coll.         |
| b. ♂ ad. st.*       | Papa Westra, Orkney Is., summer, 1812. | Bullock Coll.                |
| c. Ad. skeleton.    | Funk I, Newfoundland.                  | J. Matthew Jones, Esq. [P.]. |
| d. Bones (various). | Newfoundland.                          | Purchased.                   |

## 2. ALCA.

|                                                                                                         |                   |
|---------------------------------------------------------------------------------------------------------|-------------------|
| <i>Alca</i> , <i>Linn. S. N.</i> i. p. 210 (1766).....                                                  | Type.             |
| <i>Pinguin</i> , <i>Lacép. in Buff. Hist. Nat.</i> (18mo, Didot), <i>Quadr.</i> xiv. p. 313 (1799)..... | <i>A. torda</i> . |
| <i>Utamania</i> , <i>Leach, Syst. Cat.</i> p. 42 (1816).....                                            | <i>A. torda</i> . |

\* Cf Macgillivray, *Brit. B.* v. p. 361 (1852).

Mandibles greatly compressed and transversely grooved, the outline of the culmen strongly curved downward and following the segment of a circle. Inter-ramal feathering extending to a vertical line drawn from the anterior border of the nasal opening, which is linear and almost entirely concealed by dense feathering extending to the anterior border. Tail composed of 12 feathers. Metatarsus shorter than the middle toe and claw. Size moderate.

*Range.* Coasts of the North Atlantic, ranging south in winter to southern New England in America and the Mediterranean, and occasionally as far south as the Canary Islands.

### 1. *Alca torda*.

Le Pingoin, *Brisson, Orn.* vi. p. 89, pl. viii. fig. 1 (1760); *D'Aubent. Pl. Enl.* x. pls. 53, 54 [nos. 1003, 1004].

Le petit Pingoin, *Brisson, Orn.* vi. p. 92, pl. viii. fig. 2 (1760).

Razor-bill, *Edwards, Glean. N. Hist.* pt. iii. pl. 358. fig. 2 (1761); *Pennant, Brit. Zool.* ii. p. 509, pl. lxxxii. fig. 2 (1776); *id. Arct. Zool.* ii. p. 509 (1785); *Lath. Gen. Syn.* iii. pt. i. p. 309 (1785); *Mont. Orn. Dict.* 2nd ed. p. 401 (1831); *Selby, Ill. Brit. Orn.* ii. pl. lxxxiii. (1834); *Yarrell, Hist. Brit. B.* iii. p. 366 (1843).

*Alca unisulcata, Brünn. Orn. Bor.* p. 25 (1764).

*Alca balthica, Brünn. Orn. Bor.* p. 25 (1764); *Brehm, Handb. Vög. Deutschl.* p. 1002 (1831).

*Alca torda, Linn. S. N.* i. p. 210 (1766); *Gmel. S. N.* i. pt. ii. p. 551 (1788); *Lath. Ind. Orn.* ii. p. 793 (1790); *Meyer & Wolf, Taschenb. der Deutschl.* p. 439, pl. (1810); *Pallas, Zoogr. Rosso-As.* ii. p. 360 (1811); *Temm. Man. d'Orn.* p. 616 (1815), *id. Man. d'Orn.* 2nd ed. pt. ii. p. 936 (1820), pt. iv. p. 581 (1840); *Werner, Atl. Ois. d'Eur.* pl. 102 (1828); *Ménéville, Icon. Règ. Anim., Ois.* pl. 61. fig. 2 (1829-38); *Less. Traité d'Orn.* p. 642, pl. 119. fig. 1 (1831); *Brehm, Handb. Vög. Deutschl.* p. 1003 (1831); *Schinz, Nat. Abbild. Vög.* p. 374, pl. 130 (1833); *Nutt. Man. Orn.* p. 547 (1834); *Aud. Orn. Biogr.* iii. p. 112 (1835), v. p. 628, pl. ccciv. (1839); *Nilss. Skand. Faun.* ii. p. 520 (1835); *Gould, B. Eur.* v. pl. 401 (1837); *Keys. u. Blas. Wirbelth.* p. 236 (1840); *Schinz, Europ. Faun.* i. p. 363 (1840); *Naum. Nat. Vög. Deutschl.* xii. p. 606, pl. 336 (1844); *Aud. B. Amer.* vii. p. 247, pl. cccclxvi. (1844); *G. R. Gray, Gen. B.* iii. p. 637 (1847); *Degl. Orn. Europ.* ii. p. 525 (1849); *Reichenb. Natatores.* pl. v. figs. 18-22 (1850); *Thomps. Nat. Hist. Irel.* iii. p. 235 (1851); *Kjærboll. Danm. Fugle,* p. 413, pl. liii. fig. i. (1852); *Watters. N. Hist. B. Irel.* p. 231 (1853); *Schinz, Nat. Vög.* p. 223, pl. 102 (1853); *Baird, B. N. Amer.* p. 901 (1858); *Jaubert et Lapomm. Rich. Orn.* p. 410 (1859); *More, Ibis,* 1865, p. 451 [Great Britain]; *Gould, B. Gr. Brit.* v. pl. 47 (1866); *Degl. & Gerbe, Orn. Europ.* ii. p. 612 (1867); *Schl. Mus. Pays-Bas,* vi. *Urinat.* p. 13 (1867); *Collett, Forh. Vid. Selsk. Christ.* 1868, p. 193; *Brandt, Mélang. Biol.* vii. p. 204 (1869); *Turnb. B. E. Pennsylvania,* p. 50 (1869); *Harting, P. Z. S.* 1871, p. 120 [N.E. coast of America]; *Wright, Ibis,* 1874, p. 230 [Malta]; *Irby, Orn. Gibraltar,* p. 218 (1875); *Palmén, J. f. O.* 1876, p. 65 [Finland]; *Dresser, B. Europe,* viii. p. 557, pl. 619 (1877); *Bau, etc. J. f. O.* 1877, p. 342 [Germany]; *Barrows, P. Bost. Soc.* xix. p. 161 (1877); *Maynard, B. E. N.*

- Amer.* p. 497 (1881); *Gigl. Ibis*, 1881, p. 221 [Italy]; *Seebohm, Ibis*, 1882, p. 383 [Onega Bay]; *Samuels, N. & E. Birds*, p. 564 (1883); *Irby, Ibis*, 1883, p. 190 [Santander]; *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 472 (1884); *Lutken, Ornith.*, 1885, p. 142 [Denmark]; *Sunder. Svensk. Fogl.* iii. p. 983, pl. lii. fig. 2 (1885); *Seebohm, Hist. Brit. B.* iii. p. 375 (1885); *Saunders, ed. Farrell, Hist. Brit. B.* iv. p. 55 (1885); *Dixon, Ibis*, 1885, p. 90 [St. Kilda]; *Booth, Rough Notes*, iii. pt. xi. (1886); *A. O. U. Check-L.* p. 83 (1886); *Tschusi u. Homeyer, Ornith.*, 1886, p. 174 [local names]; *Gröndal, Ornith.*, 1886, pp. 367, 613 [Iceland], 1887, pp. 587-600; *Ridgw. Man. N. Amer. B.* p. 18 (1887); *Salvad. Ucc. Ital.* p. 296 (1887); *Tait, Ibis*, 1887, p. 399 [Portugal]; *Brusina, Soc. Hist. Nat. Croatica*, iii. p. 149 (1888); *Koenig, J. f. O.* 1888, p. 297 [Algeria], 1893, p. 105 [Tunis]; *Saunders, Ill. Man. Brit. B.* p. 679 (1889); *Bishop, Auk*, vi. p. 145 (1889) [Magdalen Is.]; *Fisher, Auk*, vii. p. 203 (1890) [N. Carolina]; *Luford, Col. Fig. Brit. B.* pt. xii. (1890); *Evans, Ibis*, 1891, p. 83 [incubation lasts 30 days]; *Hartert, Ibis*, 1892, p. 522 [E. Prussia]; *Waldo, Ibis*, 1893, p. 207 [Canary Is.]; *Rothschild, Ibis*, 1893, p. 444 [melanistic variety]; *Irby, Orn. Gibraltar*, 2nd ed. p. 394 (1895); *Schalow, J. f. O.* 1895, p. 459 [West Greenland]; *Sharpe, Handb. B. Gt. Brit.* iv. p. 106, pl. civ. (1897).
- Alca pica*, *Linn. S. N.* i. p. 210 (1766); *Gmel. S. N.* i. pt. ii. p. 551 (1788); *Pallas, Zoogr. Rosso-As.* ii. p. 361 (1811).
- Black-billed Auk, *Pennant, Brit. Zool.* ii. p. 511 (1776); *id. Arct. Zool.* ii. p. 510 (1785); *Lath. Gen. Syn.* iii. pt. i. p. 320 (1783); *id. Gen. Hist.* x. p. 65 (1824).
- Le Pingouin, *Buff. Hist. Nat. Ois.* ix. p. 390 (1783).
- Le petit Pingouin, *Buff. Hist. Nat. Ois.* ix. p. 396 (1783).
- Alca baltica*, *Gmel. S. N.* i. pt. ii. p. 551 (1788).
- Pingouin us torda, *Beauc. Tabl. Encycl. Méth.* i. p. 29, pl. x. fig. 1 (1790).
- Pingouin pica, *Bonnat. Tabl. Encycl. Méth.* i. p. 30 (1790).
- Pingouin torda, *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo. Didot), *Quadr.* xiv. p. 313 (1790).
- Pingouin pica, *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo. Didot), *Quadr.* xiv. p. 313 (1790).
- Utamania torda, *Leach, Syst. Cat.* p. 42 (1816); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 27 (1826); *G. R. Gray, List of B.* pt. iii. p. 153 (1844); *Macgill Brit. B.* v. p. 346 (1852); *Fitz. Atl. Nat. Vog.* fig. 345 (1864); *Coues, P. Ac. Philad.* 1868, p. 18; *Fritsch, Nat. Vog. Europa's*, p. 491 (1870), *Atl.* pl. 59, fig. 7 (1871); *Coues, Key N. Am. B.* p. 340 (1872); *Kumlien, Bull. U.S. Nat. Mus.* xv. p. 103 (1879); *Merriam, Bull. Nat. Orn. C.* vii. p. 242 (1882); *Stearns & Coues, N. Engl. B.-life*, ii. p. 400 (1883); *Coues, Key N. Amer. B.* 2nd ed. p. 818 (1884); *Dutcher, Auk*, ii. p. 38 (1885) [Long I., N. Y.]; *Gigl. Arif. Ital.* pp. 443, 509 (1886); *id. Arif. Ital.* i. p. 656 (1889), ii. p. 663 (1890), iii. p. 518 (1891).
- Utamania pica, *Leach, Syst. Cat.* p. 42 (1816); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 30 (1826).
- Alca haueri*, *Ray [Syn. Ar.]* p. 119 (1713), *fide Merrem in Ersch u. Gruber, Encycl.* ii. p. 407 (1819).
- Razor-billed Auk, *Lath. Gen. Hist.* x. p. 63 (1824).
- Alca glacialis*, *Brehm, Handb. Vog. Deutschl.* p. 1004 (1831).

*Alca islandica*, *Brehm, Handb. Vög. Deutschl.* p. 1005, pl. xlv. fig. 2 (1831).

*Alca microrhynchos*, *Brehm, Vogelf.* p. 410 (1855).

*Chenalopex torda*, *G. R. Gray, Hand-l. B.* iii. p. 95 (1871).

*Adult in breeding-plumage.* General colour above smoky-black, shading into sooty-brown on the sides of the face, chin, and throat; a narrow white stripe from the base of the culmen to the anterior border of the eye; fore-neck, chest, and rest of the underparts, including the under wing- and tail-coverts, pure white; quills dark brown, paler on the inner webs; secondaries tipped with white and forming a narrow white band across the wing when closed; tail dark smoky-brown, wedge-shaped, and composed of 12 feathers. Iris hazel; bill black, with a transverse white band across both mandibles; between the white band and the tip one or two distinct transverse folds; feet black.

*Adult male.* Total length about 17·5 inches, culmen from feathers on forehead to tip 1·3–1·4, from gape to tip 1·9–2·1, greatest depth of both mandibles at base 0·85, wing 7·2–7·3, tail 2·9–3, tarsus 1·25, middle toe and claw 1·8.

*Adult female.* Total length about 17·5 inches, culmen from feathers on forehead to tip 1·25, from gape to tip 2, greatest depth of both mandibles at base 0·8, wing 7·4, tail 3·3, tarsus 1·2, middle toe and claw 1·8.

*Adult in non-breeding plumage.* Differs from the above in having the chin, throat, cheeks, and sides of the head behind the eye white, like the rest of the underparts, and the narrow white stripe between the base of the culmen and the eye wanting.

*Young in down.* Head, neck, and underparts covered with short whitish down; wings, sides, and flanks whitish buff; rest of the upper parts deep blackish-brown tipped with pale rufous.

*Nestling with first plumage partly developed.* Closely resembles the adult in breeding-plumage, the upper parts as well as the chin and throat being dark smoky-brown, the white stripe between the eye and the base of the bill clearly defined, and the rest of the underparts white, slightly fringed with smoky-brown on the flanks.

*Young in first autumn plumage.* Like the adult in winter, but the bill is smooth, uniform black, and not nearly so deep.

*Young in second autumn plumage.* Like the adult in winter plumage, and has the transverse white stripes on the upper and lower mandible clearly marked, but there are no transverse folds between the white band and the tip of the culmen.

*Hab.* The same as that of the genus.

|                       |                                                              |                          |
|-----------------------|--------------------------------------------------------------|--------------------------|
| <i>a, b.</i> Ad. sk.  | North America, summer.                                       | Hudson's Bay Co.<br>[P.] |
| <i>c.</i> Vix ad. sk. | North America.                                               | Salvin-Godman Coll.      |
| <i>d.</i> ♀ ad. sk.   | Woods Holl, Massachusetts,<br>Dec. 15.                       | Salvin-Godman Coll.      |
| <i>e.</i> Vix ad. sk. | Mingan, Quebec, Canada,<br>July 20 ( <i>C. H. Merriam</i> ). | Salvin-Godman Coll.      |

|                                          |                                                                    |                               |
|------------------------------------------|--------------------------------------------------------------------|-------------------------------|
| <i>f.</i> ♂ pull. sk.                    | Bird Rock, Gulf of St. Lawrence, July 19 ( <i>C. L. Maynard</i> ). | Salvin-Godman Coll.           |
| <i>g.</i> Ad. sk.                        | Bay of Fundy ( <i>G. A. Boardman</i> ).                            | Salvin-Godman Coll.           |
| <i>k.</i> i. Ad. sk.                     | Greenland, summer.                                                 | Hume Coll.                    |
| <i>k.</i> Ad. sk.                        | Rittenbenk, Greenland, July 16 ( <i>H. W. Feilden</i> ).           | Voyage of H.M.S. 'Alert.'     |
| <i>l.</i> Ad. sk.                        | Iceland.                                                           | J. Proctor [C.].              |
| <i>m.</i> ♀ ad. sk.                      | Vestmanna Is., Iceland, summer.                                    | Hume Coll.                    |
| <i>n.</i> o. Ad. sk.                     | Orkney Islands, summer ( <i>F. D. Godman</i> ).                    | Salvin-Godman Coll.           |
| <i>p.</i> ♀ ad. sk.                      | Orkney Islands, June 10 ( <i>J. H. Dunn</i> ).                     | Hume Coll.                    |
| <i>q.</i> Juv. sk.                       | Orkney Islands ( <i>J. H. Dunn</i> ).                              | Seebohm Coll.                 |
| <i>r.</i> Juv. sk.                       | Orkney Islands.                                                    | Miss Bullock [P.].            |
| <i>s.</i> ♀ ad. sk.                      | Hoy, Orkney Islands, May 5 ( <i>E. H.</i> ).                       | Hargitt Coll.                 |
| <i>t.</i> Ad. sk.                        | Scotland, winter.                                                  | Montagu Coll.                 |
| <i>u.</i> ♂ ad. sk.                      | Sutherland, Dec. 27.                                               | Heatley Noble, Esq. [P.].     |
| <i>v.</i> ♀ imm. sk.                     | Cromarty Firth, Feb. 19.                                           | G. A. St. Quintin, Esq. [P.]. |
| <i>w.</i> Imm. sk.                       | I. of Tiree, Dec. 14.                                              | Colonel L. H. Irby [P.].      |
| <i>x.</i> Ad. sk.                        | Pembrokeshire, summer.                                             | Montagu Coll.                 |
| <i>y.</i> Ad. sk.                        | St. David's.                                                       | Dr. A. Gunther [P.].          |
| <i>z-h'</i> . ♂ ♀ ad. et imm. sk. et st. | St. Bride's, S. Wales, April, Nov.                                 | Lord Kensington [P.].         |
| <i>i'</i> . ♂ imm. sk.                   | Cornwall.                                                          | Dr. A. Gunther [P.].          |
| <i>k', l'</i> . Imm. sk.                 | Christchurch, Hants, Oct. 28.                                      | Dr. A. Gunther [P.].          |
| <i>m'</i> . ♂ ad. sk.                    | Walberswick, Suffolk, Feb. 24 ( <i>W. Tyler</i> ).                 | Seebohm Coll.                 |
| <i>n'</i> . ♂ imm. sk.                   | Wells, Norfolk, Oct. 31                                            | Dr. R. Bowdler Sharpe [P.].   |
| <i>o' r'</i> . ♂ ♀ ad. sk.               | Flamborough Head, summer.                                          | Earl of Londesborough [P.].   |
| <i>s'</i> . Imm. sk.                     | Norway.                                                            | Sir T. M. Wilson [P.].        |
| <i>t'-r'</i> . ♂ ♀ ad. et imm. sk.       | Christiansund, N. Norway, Oct, Dec.                                | N. Hanson [C.].               |
| <i>y'-z'</i> . ♂ ad. et imm. sk.         | Heligoland, April, Nov. ( <i>L. Guthe</i> )                        | Seebohm Coll.                 |
| <i>a''-b''</i> . ♂ ad. et imm. sk.       | Havre, Jan., March ( <i>V. Pluche</i> ).                           | Hargitt Coll.                 |
| <i>c''-d''</i> . ♂ ad. et. et imm. sk.   | Arcachon, S. France, Jan., Feb.                                    | W. L. S. Loat, Esq. [P.].     |
| <i>e''</i> . Imm. sk.                    | Catalan Bay, Nov.                                                  | Colonel L. H. Irby [P.].      |
| <i>f''</i> . Ad. sk.                     | Tangier, Morocco, winter ( <i>Olcese</i> ).                        | Tweddale Coll.                |
| <i>g''</i> . ♂ skeleton.                 | Sutherland, Feb. 25.                                               | Heatley Noble, Esq.           |
| <i>h'' k''</i> . Skulls.                 |                                                                    | Old Coll.                     |
| <i>l''-o''</i> . Sterna.                 |                                                                    | Old Coll.                     |

## 3. ALLE.

|                                                                                                              | Type.    |
|--------------------------------------------------------------------------------------------------------------|----------|
| Alle, <i>Link, Beschr. Nat. Samml. Univ. Rostock.</i> i. p. 17 (1806) .....                                  | A. alle. |
| Mergulus, <i>Vieillot [ex Ray, Syn. Av. p. 125 (1713)], Analyse,</i> p. 67 (1816) .....                      | A. alle. |
| Arctica, <i>G. R. Gray [ex Moehring, Av. Gen. p. 65 (1752)],</i> <i>List B.</i> pt. iii. p. 157 (1844) ..... | A. alle. |

Bill short and stout: culmen rather strongly curved downward; the depth of the upper mandible at the base considerably less than the breadth. Inter-ramal feathering extending far beyond a vertical line drawn from the anterior border of the nasal opening, which is exposed and covered anteriorly by a scale. Tail composed of 12 feathers. Metatarsus shorter than the middle toe and claw. Size small.

*Range.* Arctic Ocean, ranging north to Franz Josef Land, eastwards to Novaya Zemlya, westwards to Greenland and the west of Baffin's Bay, and south in winter to the North Sea and Atlantic as far south as the Azores and Canary Islands.

## 1. Alle alle.

- Small Black and White Diver, *Edwards, Nat. Hist. B.* ii. pl. 91 (1747).  
 Le petit Guillemot, *Brisson, Orn.* vi. p. 73 (1760); *D'Aubent, Pl. Enl.* x. pl. 50 [no. 917]; *Buff. Hist. Nat. Ois.* ix. p. 354 (1783).  
 Alca alle, *Linn. S. N.* i. p. 211 (1766); *Lath. Ind. Orn.* ii. p. 795 (1790); *Meyer & Wolf, Taschenb. der Deutschl.* p. 443 (1810); *Wilson, Amer. Orn.* ix. p. 94, pl. lxxiv. fig. 5 (1814); *Gould, B. Eur.* v. pl. 402 (1837); *Schl. Mus. Pays-Bas*, vi. Urinat. p. 20 (1867); *Harting, P. Z. S.* 1871, p. 120 [Wolstenholm Sound]; *Seebohm, Hist. Brit. B.* iii. p. 380 (1885).  
 Little Auk, *Pennant, Brit. Zool.* ii. p. 517, pl. lxxxii. fig. 1 (1776); *id. Arct. Zool.* ii. p. 512 (1785); *Lath. Gen. Syn.* iii. pt. i. p. 327 (1785); *id. Gen. Hist.* x. p. 70 (1824); *Selby, Ill. Brit. Orn.* ii. pl. lxxxi. (1834); *Yarrell, Hist. Brit. B.* iii. p. 358 (1843).  
 Alca alce (*sic*), *Gmel. S. N.* i. pt. ii. p. 554 (1788).  
 Uria grylle, *Bonnat. (nec Linn.) Tabl. Encycl. Méth.* i. p. 36, pl. ix. fig. 5 (1790).  
 Alle nigricans, *Link, Beschr. Nat. Samml. Univ. Rostock*, i. p. 17 (1806); *Coues, Bull. Nutt. Orn. C.* iv. p. 244 (1879); *Merriam, Bull. Nutt. Orn. C.* vii. p. 241 (1882) [Canada]; *Stearns & Coues, N. Engl. B.-life*, ii. p. 395 (1883); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 463 (1884); *Coues, Key N. Amer. B.* 2nd ed. p. 810 (1884); *Dutcher, Auk*, i. p. 35 (1884) [Long I., N.Y.].  
 Uria alle, *Pallas, Zoogr. Rosso-As.* ii. p. 369 (1811); *Temm. Man. d'Orn.* p. 611 (1815); *id. Man. d'Orn.* ed. 2, pt. ii. p. 928 (1820), pt. iv. p. 578 (1840); *Meyer, Appendix to Meyer & Wolf, Taschenb. der Deutschl.* p. 178 (1822); *Werner, Atl. Ois. d'Eur.* pl. 99 (1828); *Sicains. & Richardson, Faun. Bor.-Amer.* ii. p. 479 (1831) [Melville I.]; *Nutt. Man. Orn.* p. 531 (1834); *Aud. Orn. Biogr.* iv. p. 304, pl. cccxxxix. (1838).  
 Mergulus melanoleucos, *Leach, Syst. Cat.* p. 42 (1816); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 34 (1826); *Brandt, Bull. Acad.*

- St. Pétersh.* ii. p. 347 (1837); *Thomps. Nat. Hist. Irel.* iii. p. 218 (1851); *Brandt, Mélang. Biol.* vii. p. 221 (1869); *R. Gray, B. W. Scott.* p. 431 (1871); *Rowley, Orn. Misc.* i. p. 126 (1875) [Melville Bay].
- Mergulus alle*, *Vieill. N. Dict. d'Hist. Nat.* xx. p. 209 (1818); *id. Gal. Ois.* ii. p. 237, pl. 295 (1825); *Brehm, Handb. Vog. Deutschl.* p. 993 (1831); *Keys. u. Blas. Wirbelth.* p. 237 (1840); *Naum. Nat. Vog. Deutschl.* xii. p. 552, pl. 334 (1844); *Aud. B. Amer.* vii. p. 257, pl. cccclxix. (1844); *Degl. Orn. Europ.* ii. p. 518 (1849); *Reichenb. Natatores*, pl. viii. figs. 48-50 (1850); *Kjærholl. Danm. Fugle*, p. 411, pl. iii. fig. 6 (1852); *Macgill. Brit. B.* v. p. 341 (1852); *Watters, N. Hist. B. Irel.* p. 230 (1853); *Schinz, Nat. Vog.* p. 220, pl. 102 (1853); *Baird, B. N. Amer.* p. 918 (1858); *Fitz. Alt. Nat. Vog.* fig. 342 (1864); *Newton, Ibis*, 1865, p. 521 [Spitsbergen]; *Godman, Ibis*, 1868, p. 102 [Azores]; *Degl. & Gerbe, Orn. Europ.* ii. p. 605 (1867); *Collett, Forh. Vid. Selsk. Christ.* 1868, p. 103; *Coues, P. Ac. Philad.* 1868, p. 54; *Gould, B. Gt. Britain*, v. pl. 50 (1868); *Gillet, Ibis*, 1870, p. 308 [Novaya Zemlya]; *Fritsch, Nat. Vog. Europa's*, p. 496 (1870), *Atl.* pl. 59. fig. 1 (1871); *Coues, Key N. Amer. B.* p. 343 (1872); *Heugl. Ibis*, 1872, p. 64 [Novaya Zemlya; Kara Sea]; *Godman, Ibis*, 1872, p. 224 [Canary Islands]; *Heugl. J. f. O.* 1872, p. 123; *Palmén, J. f. O.* 1876, p. 65 [Finland]; *Dresser, B. Europe*, viii. p. 591, pl. 624 (1877); *Barrons, P. Rost. Soc.* xix. p. 156 (1877); *Feilden, P. Z. S.* 1877, p. 28 [Port Foulke]; *id. Ibis*, 1877, p. 410 [Greenland]; *Bau, etc. J. f. O.* 1877, p. 342 [Germany]; *Kumlien, Bull. U.S. Nat. Mus.* xv. p. 104 (1879); *Maynard, B. E. N. Amer.* p. 499 (1881); *Seeböhm, Ibis*, 1882, p. 383 [Kola Peninsula]; *Neale, P. Z. S.* 1882, p. 653 [Franz Josef Land]; *Samuels, N. & E. Birds*, p. 670 (1883); *Saunders ed. Yarrell, Hist. Brit. B.* iv. p. 85 (1885); *Sunde. Svensk Fagl.* iii. p. 1035, pl. h. nr. 3 (1885); *Thom, Ibis*, 1885, p. 90 [St. Kilda]; *Slater & Carter, Ibis*, 1886, p. 52 [N. Iceland]; *Gröndal, Orn.*, 1886, p. 267 [Iceland, 1887, p. 504]; *Saunders, Ill. Man. Brit. B.* p. 689 (1889); *Hartert, Ibis* 1892, p. 522 [E. Prussia]; *Lilford, Col. Fig. Brit. B.* pt. xxiii. (1893); *Clarke, Ann. Scot. N. H.* iv. pp. 97-108, pl. iii. [map] (1895) [visitation in Scotland]; *Schalow, J. f. O.* 1895, p. 461 [West Greenland]; *Pearson, Ibis*, 1896, p. 225 [Novaya Zemlya]; *Battye, Ibis*, 1897, p. 509 [Spitsbergen]; *Pearson, Ibis*, 1898, p. 207; *Clarke, Ibis*, 1898, p. 272 [Franz Josef Land].
- Uria minor*, *Merrem in Ersch u. Gruber, Encycl.* ii. p. 406 (1819).
- Common Sea-Dove, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 34, pl. iii. (1826).
- Cephus minor*, *Ménerille, Icon. Rög. Anim., Ois.* pl. 60. fig. 5 (1829-38).
- Rotch, Mont. Orn. Dict.* 2nd ed. p. 438 (1831).
- Mergulus arcticus*, *Brehm, Handb. Vog. Deutschl.* p. 1036, pl. xlv. fig. 3 (1831).
- Cephus alle*, *Schinz, Nat. Abbild. Vog.* p. 368, pl. 130 (1833).
- Cephus alle*, *Schinz, Europ. Faun.* i. p. 358 (1840).
- Arctica alle*, *G. R. Gray, List of B.* pt. iii. p. 157 (1844); *id. Gen. B.* iii. p. 645 (1848); *id. Hand-l. B.* iii. p. 101 (1871).
- Alle alle*, *A. O. U. Check-l.* p. 84 (1886); *Ridgw. Man. N. Amer. B.* p. 19 (1887); *Chamberlain, Auk*, vi. p. 213 (1889) [S. Greenland]; *Warren, R. Pennsylvania*, p. 10 (1890); *Stone, P. Ac. Philad.* 1892, p. 146 [Cape York]; *Broen, Auk*, x. p. 204 (1893) [Virginia]; *Sharpe, Handb. B. Gt. Brit.* iv. p. 127, pl. cix (1897).

*Adult in breeding-plumage.* Top of the head and upper parts black with a greyish gloss; rest of the head, neck, and chest sooty-black; secondaries tipped and scapulars margined on the sides with white; breast and rest of the underparts white, the inner webs of the inner flank-feathers dull black; quills and tail greyish black; the latter composed of 12 feathers. Iris hazel; bill black; feet and toes livid brown; toes darker.

Total length about 8·5 inches, culmen from feathers on forehead to tip 0·6–0·65, from gape to tip 0·9, greatest depth of both mandibles at base 0·4, wing 4·6–4·7, tail 1·3–1·5, metatarsus 0·85–0·9, middle toe and claw 1·2–1·3.

*Adult in non-breeding plumage.* Differs from the above in having the throat, lower part of the cheeks, sides of the nape, fore-neck, and chest white like the rest of the underparts, the latter being however distinctly mottled with dusky, especially on the sides.

*A quite young bird in summer* (Aug. 9). Perfectly similar to the adult in breeding-plumage, but about half the size; the upper parts devoid of gloss, and the bill much slighter. The wing, with the quills only partially grown, measures 3·4 inches.

*Immature (in first winter plumage).* May be distinguished from the adult by its smaller bill and by the lack of gloss on the upper part.

*Young in down.* Uniform dark smoky-grey, somewhat paler on the underparts.

*Hab.* The same as that of the genus.

|                       |                                                            |                              |
|-----------------------|------------------------------------------------------------|------------------------------|
| <i>a-c.</i> Ad. sk.   | North America ( <i>Parry</i> ).                            | The Admiralty [P.].          |
| <i>d.</i> Ad. sk.     | Godbout, Quebec, Canada, Jan. (N. A. Comeau).              | Salvin-Godman Coll.          |
| <i>e.</i> Ad. sk.     | Grand Manan I., New Brunswick, Feb. ( <i>H. Herrick</i> ). | Salvin-Godman Coll.          |
| <i>f.</i> Ad. sk.     | Grand Manan I., winter ( <i>H. E. Dresser</i> ).           | Salvin-Godman Coll.          |
| <i>g.</i> Ad. sk.     | Bay of Fundy, winter ( <i>G. A. Boardman</i> ).            | Salvin-Godman Coll.          |
| <i>h-k.</i> ♀ ad. sk. | Boston, Massachusetts, Nov. 15 ( <i>H. W. Henshaw</i> ).   | Salvin-Godman Coll.          |
| <i>l.</i> Ad. sk.     | Cape Walker, Baffin's Bay, July 26 ( <i>R. McC.</i> ).     | McCormick Bequest.           |
| <i>m, n.</i> Ad. sk.  | Greenland, winter.                                         | Hume Coll.                   |
| <i>o.</i> Ad. sk.     | Greenland, summer ( <i>Gov. Fencker</i> ).                 | Salvin-Godman Coll.          |
| <i>p.</i> ♂ ad. sk.   | Lichtenfels, S. Greenland, Nov.                            | Dr. R. Bowdler Sharpe [P.].  |
| <i>q.</i> Ad. sk.     | Faroës, winter ( <i>H. C. Müller</i> ).                    | Hargitt Coll.                |
| <i>r.</i> ♀ ad. sk.   | Thorshavn, Faroës, winter.                                 | Seebohm Coll.                |
| <i>s.</i> ♀ ad. sk.   | Moray Firth, Dec. 10.                                      | J. M. Chadwick, Esq. [P.].   |
| <i>t.</i> ♂ ad. sk.   | Fosdyke, near Spalding, Lincolnshire, Feb. 2.              | T. J. H. Brogden, Esq. [P.]. |
| <i>u.</i> ♂ ad. sk.   | Devonshire, winter.                                        | Montagu Coll.                |
| <i>v.</i> Ad. sk.     | Off Spitsbergen, lat. 79° 30' N., long. 4° E., summer.     | Capt. D. Gray [P.].          |



|                    |                            |                     |
|--------------------|----------------------------|---------------------|
| w-y. ♂ ♀ ad. st.   | Wijde Bay, Spitsbergen,    | A. Trevor-Battye,   |
| juv. sk.           | Aug. 4.                    | Esq [P.].           |
| z. ♂ ad. sk.       | Cape Neale, Franz Josef    | Jackson-Harmsworth  |
|                    | Land, July 2½ (F. G. Jack- | Exped. [P.].        |
|                    | son).                      |                     |
| a'. Skeleton.      | Greenland.                 |                     |
| b'. Skeleton.      | Great Britain.             | Meinertzhagen Coll. |
| c', d'. Skeletons. |                            | Old Coll.           |

## 4. URIA.

|                                                               | Type.      |
|---------------------------------------------------------------|------------|
| Uria, Brisson, Orn. vi. p. 70 (1760) . . . . .                | U. troile. |
| Cephus, Pallas, Spicil. Zool. fasc. v. p. 33 (1760) . . . . . | U. grylle. |
| Grylle, Leach in Ross' Voy. Expl. Baffin's Bay, App.          |            |
| p. li (1819) . . . . .                                        | U. mandt.  |
| Lomvia, Brandt, Bull. Ac. St. Petersb. ii. p. 345 (1837).     | U. troile. |
| Cataractes, G. R. Gray [ex Moehring Av. Gen. p. 68            |            |
| (1752)], List Gen. B. p. 98 (1841) . . . . .                  | U. troile. |

- Bill elongate and moderately compressed; culmen more or less curved downward towards the tip. Inter-ramal feathering extending to or slightly beyond a vertical line drawn from the anterior border of the nasal opening, which is linear and partially or almost entirely concealed by dense feathering extending nearly or quite to the anterior border. Tail composed of 12 or 14 feathers. Metatarsus shorter than the middle toe and claw. Size moderate.

*Range.* Arctic Ocean, Bering Sea, and the northern parts of the Atlantic and Pacific Oceans.

*Key to the Species.*

- I. Tail composed of 12 feathers; lining of wing white.
  - A. Wing-coverts uniform greyish black; tips of secondaries white. Size larger, wing 7.5-9.1 inches.
    - a. Bill more slender and elongate; the feathering on the basal part of the upper mandible extending to the cutting-edge.
      - a'. Feathers round the eye and along the crease behind it black. . . . . *troile*, p. 573.
      - b'. Feathers round the eye and along the crease behind it white . . . . . *ringvia*, p. 575.
    - b. Bill stouter; basal part of the upper mandible not covered with feathers . . . . . *lomvia*, p. 577.
  - B. Greater and median wing-coverts forming a large white patch on the wing, secondaries not tipped with white. Size smaller, wing 6.6-8.4 inches.
    - c. Basal half of the primary-coverts black . . . . . *grylle*, p. 580.
    - d. Primary-coverts white almost to the base . . . *mandt*, p. 584.
- II. Tail composed of 14 feathers; lining of wing grey.
  - C. A large double white patch on the wing, formed by the median and the tips of the greater wing-coverts . . . . . *columba*, p. 586.

D. Wing-coverts uniform greyish black or with narrow white tips to the larger coverts forming at most three narrow white bands.

- e. Orbital region black ..... *snowi*, p. 588.  
 f. Orbital region white ..... *carbo*, p. 588.

### 1. *Uria troile*.

Le Guillemot, *Briss. Orn.* vi. p. 70, pl. vi. fig. i. (1760); *Buff. Hist. Nat. Ois.* ix. p. 350 (1783); *D'Aubent. Pl. Enl.* x. pl. 49 [no. 903].

Guillemot, *Edwards, Glean. N. Hist.* pt. iii. pl. 359. fig. 1 (1762).

Colymbus troile, *Linn. S. N.* i. p. 220 (1766); *Gmel. S. N.* i. pt. ii. p. 585 (1788).

Foolish Guillemot, *Pennant, Brit. Zool.* ii. p. 519 (1776); *id. Arct. Zool.* ii. p. 516 (1785); *Lath. Gen. Syn.* iii. pt. ii. p. 329 (1785); *id. Gen. Hist.* x. p. 74 (1824); *Selby, Ill. Brit. Orn.* ii. pl. lxxix. (1834).

Lesser Guillemot, *Pennant, Brit. Zool.* ii. p. 520, pl. lxxxiii. fig. 1 (1776); *Lath. Gen. Syn.* iii. pt. ii. p. 331 (1785); *id. Gen. Hist.* x. p. 77 (1824); *Steph. in Shaw's Gen. Zool.* ix. pt. ii. p. 246, p. 63 (1824).

Colymbus minor, *Gmel. S. N.* i. pt. ii. p. 585 (1788).

*Uria troile*, *Lath. Ind. Orn.* ii. p. 796 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 35, pl. ix. fig. 3 (1790); *Meyer & Wolf, Taschenb. der Deutschl.* p. 445 (1810); *Temm. Man. d'Orn.* p. 606 (1815); *Valenc. in Choris, Voy. Pittor. autour du Monde, Aléout.* p. 25, pl. xx. (1822); *Temm. Man. d'Orn.* ed. 2, pt. ii. p. 921 (1820), pt. iv. p. 573 (1840); *Steph. in Shaw's Gen. Zool.* xii. pt. ii. p. 244 (1824); *Werner, Atl. Ois. d'Eur.* pl. 95 (1828); *Sicains. & Richardson, Faun. Bor.-Amer.* ii. p. 477 (1831); *Brehm, Handb. Vög. Deutschl.* p. 981 (1831); *Nutt. Man. Orn.* p. 526 (1834); *Aud. Orn. Biogr.* iii. p. 142, pl. ccxviii. (1835); *Nilss. Skand. Faun.* ii. p. 504 (1835); *Gould, B. Eur.* v. pl. 396 (1837); *Schinz, Europ. Faun.* i. p. 360 (1840); *G. R. Gray, List of B.* pt. iii. p. 156 (1844); *De Kay, N. Y. Zool.* ii. p. 279 (1844); *Aud. B. Amer.* vii. p. 267, pl. cccclxxiii. (1844); *G. R. Gray, Gen. B.* iii. p. 645 (1848); *Degl. Orn. Europ.* ii. p. 511 (1849); *Reichenb. Natatores*, pl. viii. figs. 32-36 (1850); *Thomps. Nat. Hist. Irel.* iii. p. 207 (1851); *Kjærboll. Danm. Fugle*, p. 408, pl. lii. fig. 4 (1852); *Macgill. Brit. B.* v. p. 318 (1852); *Watters, N. Hist. B. Irel.* p. 226 (1853); *Newberry, Rep. Expl. Surv.* vi. pt. iv. p. 110 (1857) [Coast of California; Farallone Is.]; *Jaubert et Lapomm. Rich. Orn.* p. 408 (1859); *More, Ibis*, 1865, p. 449 [Great Britain]; *Degl. & Gerbe, Orn. Europ.* ii. p. 598 (1867); *Collett, Forh. Vid. Selsk. Christ.* 1868, p. 192; *Smith, Ibis*, 1868, p. 457; *Brandt, Mélang. Biol.* vii. p. 205 (1869); *G. R. Gray, Hand-l. B.* iii. p. 101 (1871); *R. Gray, B. W. Scottl.* p. 420 (1871); *Gould, B. Gt. Britain*, v. pl. 48 [front figure] (1873); *Irby, Orn. Gibraltar*, p. 218 (1875); *Palmén, J. f. O.* 1876, p. 65 [Finland]; *Blakist. & Pryer, Ibis*, 1878, p. 211 [Hakodadi]; *id. Tr. As. Soc. Jap.* viii. p. 180 (1880); *Saunders, Ill. Man. Brit. B.* p. 683 (1889); *Maynard, B. E. N. Amer.* p. 500 (1881); *Blakist. & Pryer, Tr. As. Soc. Jap.* x. p. 91 (1882); *Chamberlain, Bull. Nutt. Orn. C.* viii. p. 9 (1883) [New Brunswick: rare]; *Irby, Ibis*, 1883, p. 190 [Santander]; *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 477 (1884); *Dixon, Ibis*, 1885, p. 89 [St. Kilda];

- Saunders, ed. Farrell Hist. Brit. B.* iv. p. 69 (1885); *Sunder. Svensk. Fogl.* iii. p. 1103, pl. lii. fig. 4 (1885); *Latken, Ornis*, 1885, p. 142, 1886, p. 97 [Denmark]; *Grondal, Ornis*, 1886, pp. 367, 612 [Iceland]; *A. O. U. Check-l.* p. 82 (1886); *Booth, Rough Notes*, iii. pt. xiv. 2 pls. (1887); *Ridgw. Mun. N. Am. B.* p. 18 (1887); *Bishop, Auk*, vi. p. 145 (1889) [Magdalen Is.]; *Lilford, Col. Fig. Brit. B.* pt. xxi. (1892); *Irby, Orn. Gibraltar*, 2nd ed. p. 304 (1895); *Sharpe, Handb. B. Gr. Brit.* iv. p. 114, pl. cvi (1897).
- Uria minor*, *Steph. in Shaw's Gen. Zool.* xii. pt. ii. p. 246 (1824).
- Uria norwegica*, *Brahm, Handb. Vög. Deutschl.* p. 983 (1831).
- Willock, Mont. Orn. Dict.* 2nd ed. p. 545 (1831).
- Uria intermedia*, *Nilss. Skand. Faun.* ii. p. 506 (1835).
- Lomvia troile*, *Brandt, Bull. Ac. St. Pétersb.* ii. p. 345 (1837); *Coues, P. Ac. Philad.* 1868, p. 75; *id. Key N. Am. B.* p. 346 (1872); *Barrows, P. Bost. Soc.* xix. p. 160 (1877); *Bean, P. U.S. Nat. Mus.* v. p. 172 (1882) [Cook's Inlet]; *Merriam, Bull. Nutt. Orn. C.* vii. p. 241 (1882); *Stearns & Coues, N. Engl. B.-life*, ii. p. 397 (1883); *Coues, Key N. Amer. B.* 2nd ed. p. 816 (1884); *Salvad. Ucc. Ital.* p. 297 (1887); *Evans, Ibis*, 1891, p. 83 [Incubation lasts 30-33 days]; *Tait, Ibis*, 1887, p. 399 [Portugal]; *Gigl. Avif. Ital.* i. p. 659 (1889).
- Uria lomvia*, *Keys. u. Blas. (nec Pallas), Wirbelth.* p. 238 (1840); *Naum. Nat. Vög. Deutschl.* xii. p. 508, pl. 331 (1844); *Reichenb. Natatores*, pl. viii. figs. 39-42 (1850); *Schinz, Nat. Vög.* p. 221, pl. 102 (1853); *Baird, B. N. Amer.* p. 913 (1858); *Dall & Bann. Tr. Chicago Acad.* i. p. 309 (1869) [Kodiak I.]; *Fritsch, Nat. Vög. Europa's*, p. 493 (1870), *Atl.* pl. 80, fig. 7 (1871); *Bau, etc. J. f. O.* 1877, p. 342 [Germany]; *Tacz. Bull. Soc. Z. Fr.* ii. p. 51 (1877) [Abrek Bay]; *Samuels, N. & E. Birds*, p. 568 (1883); *Hartert, Ibis*, 1892, p. 522 [Danzig].
- Common Guillemot, *Farrell, Hist. Brit. B.* iii. p. 343 (1843).
- Uria brunneha*, *Heerm. (nec Sabine) Rep. Engl. Surv.* x. pt. iv. *Birds*, p. 75 (1859); *Baltge, Icebound on Kulguev*, p. 20 (1895), *id. Ibis*, 1893, p. 155.
- Catarractes troile*, *Bryant, P. Bost. Soc.* viii. p. 136, fig. 2a (1861).
- Catarractes californicus*, *Bryant, P. Bost. Soc.* viii. p. 142, figs. 3 & 5 (1861) [Farallon Is.].
- Alca lomvia*, *Schl. (nec Pallas) Mus. Pays-Bas*, vi. *Urinat.* p. 15 (1867).
- Lomvia californica*, *Coues, P. Ac. Philad.* 1868, p. 79.
- Uria californica*, *Dall & Bann. Tr. Chicago Acad.* i. p. 309 (1869) [Sitka, Kodiak]; *Finsch, Abh. Nat. Ver. Brem.* in p. 77 (1872); *Dall, Avif. Aleut.* p. 10 (1873); *id. P. Calif. Acad.* v. pp. 34, 280 (1873) [Aleutian Is.].
- Alca troile*, *Dresser, B. Europe*, viii. p. 567, pl. 621 [hind figure] (1877); *Newton, P. Z. S.* 1877, p. 2 [variety]; *Seebohm, Hist. Brit. B.* iii. p. 388 (1885); *id. B. Japan*, p. 273 (1890) [part].
- Lomvia troile*, var. *californica*, *Elliot, Seal Isl. Alaska*, p. 135 (1881).
- Uria troile californica*, *Baird, Brew & Ridgw. Water-B. N. Amer.* ii. p. 483 (1884); *Stejn. Bull. U.S. Nat. Mus.* xxix. p. 20 (1885) [Commander Is.]; *A. O. U. Check-l.* p. 82 (1886); *Evermann, Auk*, iii. p. 88 (1886) [Ventura, California]; *Ridgw. Man. N. Am. B.* p. 18 (1887); *Nelson, Rep. N. H. Alaska*, p. 45 (1887); *Stejn. P. U.S. Nat. Mus.* x. p. 118 (1887) [Commander Is.]; *Tacz. Mém. Acad. St. Pétersb.* xxxix. p. 1219 (1893) [E. Siberia]; *Loonius, P. Calif. Acad.* (2) vi. p. 20 (1896) [California]; *Grinnell, Auk*, xv. p. 125 (1898) [Sitka]; *Seale, P. Ac. Philad.* 1898, p. 129.

*Lomvia troile californica*, *Cones, Key N. Amer. B.* 2nd ed. p. 817 (1884).

*Alca troile californica*, *Seebohm, Hist. Brit. B.* iii. p. 389 (1885).

*Adult in breeding-plumage.* General colour above, including the top of the head, greyish black, becoming browner as the plumage becomes worn; sides of the head, chin, throat, and fore-neck of a browner tint, in some examples dark sooty-brown or even black; chest and rest of the underparts, as well as the under wing-coverts, white, the side- and flank-feathers streaked with dark grey; quills greyish-black, paler on the inner web, the secondaries tipped with white; tail brownish-black, composed of 12 feathers. Iris dark brownish-black; bill dull black, inside of mouth bright yellow; back of tarsus, soles, webs, joints, and nails dull black; fore part of tarsus and toes between the joints brownish white. Total length about 18 inches, culmen from feathers on forehead to tip 1·9, from gape to tip 2·7, greatest depth of both mandibles at base 0·55, wing 7·5–8, tail 1·7–2·1, tarsus 1·45–1·5, middle toe and claw 2–2·2.

*Adult in non-breeding plumage.* Differs from the above in having the chin, throat, fore-neck, and sides of the head white; the white patch on the sides of the occiput being margined below by a dark greyish-black postorbital band. Bill blackish horn, lighter on the base of the lower mandible, inner side of the metatarsus and toes pale brownish-white, outer half of the metatarsus, joints, and webs dusky brownish-black; nail black.

*Immature.* Resembles the adult in winter plumage, but the fore-neck and white patches on the sides of the occiput are more or less mottled with dusky.

*Young in down.* Upper parts brown; top of the head and nape blackish, streaked with white; throat and fore-neck brownish, mottled with white; chest, breast, and belly white.

*Uria troile, var. ringvia.*

*Uria ringvia*, *Brünn. Orn. Bor.* p. 28 (1764); *Schinz, Europ. Faun.* i. p. 359 (1840); *G. R. Gray, List of B.* pt. iii. p. 157 (1844); *id. Gen. B.* iii. p. 645 (1848); *Degl. Orn. Europ.* ii. p. 513 (1849); *Baird, B. N. Amer.* p. 914 (1853); *Degl. & Gerbe, Orn. Europ.* ii. p. 600 (1867); *Samuels, N. & E. Birds*, p. 570 (1883); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 481 (1884); *Sharpe, Handb. B. Gr. Brit.* iv. p. 119, pl. cvii. (1897).

*Uria alga*, *Brünn. Orn. Bor.* p. 28 (1764).

*Uria troile leucophthalmos*, *Faber, Prodromus*, p. 42 (1822).

*Uria lacrymans*, *Lapylaie MS., fide Valenc. in Choris Voy. Pittor. autour du Monde, Aléout.* p. 27, pl. xxiii. (1822); *Werner, Atl. Ois. d'Eur.* pl. 98 (1828); *Lesson, Traité d'Orn.* p. 638 (1831); *Gould, B. Eur.* v. pl. 397 (1837); *Macgill. Brit. B.* v. p. 326 (1852); *Watters, N. Hist. B. Irel.* p. 229 (1853); *R. Gray, B. W. Scotl.* p. 424 (1871).

*Uria leucopsis*, *Brehm, Handb. Vög. Deutschl.* p. 982 (1831).

*Uria hringvia*, *Keys. u. Blasius, Wirbelth.* p. 238 (1840); *Naum. Nat. Vög. Deutschl.* xii. p. 524, pl. 332 (1844); *Reichenb. Natornes*, pl. viii. figs. 37–38 (1850).

- Ringed or Bridled Guillemot, *Yarrell, Hist. Brit. B.* iii. p. 351 (1843); *Saunders, Ill. Man. Brit. B.* p. 384 (1889).  
*Uria leucophthalmos*, *Thomps. Nat. Hist. Irel.* iii. p. 211 (1851); *Kjærboell, Danm. Fugle*, p. 408, pl. lii. fig. 5 (1852).  
*Catarractes ringvia*, *Bryant, P. Acad. Soc.* viii. p. 139, fig. 2 (1861).  
*Uria troile*, var. *ringvia*, *Collett, Forh. Vid. Selsk. Christ.* 1868, p. 192.  
*Lomvia ringvia*, *Coues, P. Ac. Philad.* 1868, p. 75; *Goss, Tr. Kansas Acad.* viii. p. 60 (1883) [Bird Rock: breeding habits].  
*Uria wringria* (*sic*), *Fritsch, Nat. Fög. Europa's*, p. 495 (1870), *Atl.* pl. 59 fig. 5 (1871).  
*Uria rbingvia*, *G. R. Gray, Hand-l. B.* iii. p. 101 (1871).  
*Uria troile*, *Gould, B. Gt. Britain*, v. pl. 48 [back figure] (1873).  
*Alca troile*, *Dresser, B. Europe*, viii. pl. 621 [front figure] (1877).  
*Uria rhyngvia*, *Gröndal, Orn.* 1887, p. 597.

This variety differs from typical *U. troile* in having the feathers round the eye and along the crease behind it pure white.

*Hab.* Coasts and islands of the North Atlantic and Pacific Oceans and Bering Sea, ranging south to Japan, California, New England, and Portugal, occasionally entering the Mediterranean Sea, and met with in the Atlantic down to about lat. 30° in winter.

|                                |                                                                    |                                         |
|--------------------------------|--------------------------------------------------------------------|-----------------------------------------|
| <i>a c.</i> Ad. sk.            | Kurile Islands, autumn to winter<br>( <i>O. Snow</i> ).            | Seeböhm Coll.                           |
| <i>d.</i> ♀ ad. sk.            | Bering I., Commander Group,<br>July 3.                             | G. E. Barrett-Hamilton, Esq. [P.].      |
| <i>e.</i> Ad. sk.              | North-west America, summer.                                        | Capt. Kellett & Lieut. Wood, R.N. [P.]. |
| <i>f.</i> ♀ ad. sk.            | St. Michael's, Alaska, May 10<br>( <i>E. W. Nelson</i> ).          | Salvin-Godman Coll.                     |
| <i>g.</i> ♂ ad. sk.            | Stewart I., Alaska, June (E. W. N.).                               | Salvin-Godman Coll.                     |
| <i>h.</i> Ad. sk.              | California, summer.                                                | J. H. Gurney, Esq. [P.].                |
| <i>i-m.</i> ♀ ad. et imm. sk.  | Monterey, California, Jan, May, June, Aug.                         | Mr. A. Seale [C.]                       |
| <i>n, o.</i> Ad. sk.           | Farallone Is., summer.                                             | Salvin-Godman Coll.                     |
| <i>p.</i> Ad. sk.*             | Hudson's Bay, summer.                                              | Hudson's Bay Co.                        |
| <i>q.</i> ♂ pull. sk.          | Bird Rock, Gulf of St. Lawrence, July 15 ( <i>C. J. Maynard</i> ). | Salvin-Godman Coll.                     |
| <i>r.</i> ♂ ad. sk.            | Vestmanna Is., Iceland, summer.                                    | Hume Coll.                              |
| <i>s.</i> ♀ ad. sk.*           | Vestmanna Is., Iceland, summer.                                    | Hume Coll.                              |
| <i>t.</i> ♂ ad. st.*           | Orkney Is., summer ( <i>E. H.</i> ).                               | Hargitt Coll.                           |
| <i>u.</i> ♂ ad. sk.            | Orkney Is., summer ( <i>E. H.</i> ).                               | Hargitt Coll.                           |
| <i>v-x.</i> ♂ ad. et pull. sk. | Near Cara, Orkney Is., Dec. ( <i>J. H. Dunn</i> ).                 | Hargitt Coll.                           |
| <i>y.</i> ♂ ad. sk.            | Hoy Head, Orkney Is., Mar. 25 ( <i>J. H. D.</i> ).                 | Hargitt Coll.                           |
| <i>z.</i> Pull. sk.            | Hoy Head, Orkney Is., July 19.                                     | Gould Coll.                             |
| <i>a'.</i> ♂ ad. sk.           | Great Britain, summer.                                             | Montagu Coll.                           |
| <i>b'.</i> Ad. sk.             | Great Britain, winter.                                             | Dr. Leach [P.].                         |
| <i>c', d'.</i> ♂ ad. sk.       | Cromarty Firth, Feb.                                               | G. A. St. Quintin, Esq. [P.].           |
| <i>e'.</i> ♂ ad. sk.           | St. Kilda, summer.                                                 | Theodore Walker, Esq. [P.].             |

\* Bridled variety

|                                           |                                        |                               |
|-------------------------------------------|----------------------------------------|-------------------------------|
| <i>f'</i> , <i>g'</i> . Ad.* et pull. sk. | Isle of Skye, summer.                  | F. P. Johnson, Esq. [P.].     |
| <i>h'-l'</i> . Ad. sk.                    | St. David's, Pembrokeshire, summer.    | Dr. A. Günther [P.].          |
| <i>m'-t'</i> . ♂ ♀ ad. et imm. sk. et st. | St. Bride's, June, Nov., Dec.          | Lord Kensington [P.].         |
| <i>u'</i> . Pull. sk.                     | Lundy I., July.                        | H. Saunders, Esq. [P.].       |
| <i>v'</i> . Ad. sk.                       | Devonshire.                            | Montagu Coll.                 |
| <i>w'</i> . Ad. sk.*                      | Isle of Wight, winter.                 | J. Bond, Esq. [P.].           |
| <i>x'</i> . Ad. sk.                       | Eastbourne, Sussex, May (G. E. S.).    | Shelley Coll.                 |
| <i>y'</i> . ♂ imm. sk.                    | Tilbury, Essex, Oct.                   | H. Grant, Esq. [P.].          |
| <i>z'</i> . ♀ imm. sk.                    | North Creak, Norfolk, Dec. 23.         | Col. H. W. Feilden [P.].      |
| <i>a''</i> . ♂ ad. sk.*                   | Yorkshire Coast, summer.               | Seeböhm Coll.                 |
| <i>b''</i> . Ad. sk.                      | Flamborough Head, Yorkshire, June.     | Dr. H. Gadow [P.].            |
| <i>c''</i> . ♀ ad. sk.                    | Flamborough Head, June.                | Dr. R. Bowdler Sharpe [P.].   |
| <i>d''-g''</i> . Ad. sk.*                 | Flamborough Head, summer.              | Earl of Lonsborough [P.].     |
| <i>h''-k''</i> . Ad. sk.                  | Flamborough Head, summer.              | Earl of Lonsborough [P.].     |
| <i>l''</i> . ♀ ad. sk.                    | Scarborough, Feb. Weight 2 lb. 7½ ozs. | Y. H. Mills, Esq. [P.].       |
| <i>m''-o''</i> . Ad. sk.                  | Norway, summer (H. S.).                | Seeböhm Coll.                 |
| <i>p''-r''</i> . ♂ ♀ ad. et ♀ imm. sk.    | Christiansund, N. Norway, Aug. 30.     | N. Hanson [C.].               |
| <i>s''</i> . ♀ ad. sk.*                   | Christiansund, Nov. 14.                | N. Hanson [C.].               |
| <i>t''</i> . ♂ ad. sk.                    | Heligoland, April (L. Gütke).          | Seeböhm Coll.                 |
| <i>u''</i> . ♂ ad. sk.*                   | Heligoland, Jan. (L. G.).              | Seeböhm Coll.                 |
| <i>v''-z''</i> . ♂ ♀ ad. sk.              | Havre, Dec., Jan. (V. Pluche).         | Hargitt Coll.                 |
| <i>a³</i> . ♀ ad. sk.*                    | Havre, March (V. P.).                  | Hargitt Coll.                 |
| <i>b³</i> . Ad. sk.                       | Ferrol Is., N. Spain, summer.          | Dr. L. V. Seoane [P.].        |
| <i>c³</i> . Skeleton.                     | Greenland.                             | Old Coll.                     |
| <i>d³</i> . ♂ skeleton.                   | Cromarty Firth, Feb.                   | G. A. St. Quintin, Esq. [P.]. |
| <i>e³</i> . ♂ skeleton.                   | St. Bride's, S. Wales, April 18.       | Lord Kensington [P.].         |
| <i>f³</i> . Skeleton.                     |                                        | Salvin-Godman Coll.           |
| <i>g³</i> . Skeleton.                     |                                        | Old Coll.                     |
| <i>h³</i> . Skeleton.*                    |                                        | Old Coll.                     |
| <i>i³</i> . Skull.                        |                                        | Seeböhm Coll.                 |
| <i>k³, l³</i> . Skulls.                   |                                        | Old Coll.                     |
| <i>m³, n³</i> . Sterna.                   |                                        | Old Coll.                     |

2. *Uria lomvia*.

*Uria troille*, Bränn. Orn. Bor. p. 27 (1764) [Iceland].

*Uria svarbag*, Bränn. Orn. Bor. p. 27 (1764) [Iceland].

*Cephus lomvia*, Pallas, Zoogr. Rosso-As. ii. p. 345 (1811).

*Cephus arra*, Pallas, Zoogr. Rosso-As. ii. p. 347 (1811).

\* Bridled variety.

- Uria brunnicchi*, *Sabine*, *Tr. Linn. Soc.* xii. p. 538 (1817) [Greenland]; *Meyer*, *Appendix to Meyer & Wolf, Taschenb. der Deutschl.* p. 178 (1822); *Valenc. in Choris, Voy. Pittor. autour du Monde, Aléout.* p. 26, pl. xxi. (1822) [Baffin's Bay; Davis Strait]; *Scoates & Richardson, Faun. Bor.-Amer.* ii. p. 477 (1831); *Brehm, Handb. Vog. Deutschl.* p. 984 (1831); *Schinz, Nat. Abbild. Vog.* p. 370, pl. 129 (1833); *Nutt. Man. Orn.* p. 529 (1834); *Aud. Orn. Biogr.* iii. p. 336, pl. cclxv. (1835); *Nils. Skand. Faun.* ii. p. 508 (1835); *Gould, B. Eur.* v. pl. 398 (1837); *Temm, Man. d'Orn.* ed. 2, pt. iv. p. 576 (1840); *Aud. B. Amer.* vii. p. 265, pl. cccclxxii. (1844); *G. R. Gray, Gen. B.* iii. p. 645 (1848); ? *Thomps. Nat. Hist. Irel.* iii. p. 213 (1851); *Kjærboll, Danm. Fugle*, p. 409, pl. lii. fig. 3 (1852); *Macgill, Brit. B.* v. p. 314 (1852); *Newton, Ibis*, 1865, p. 520 [Spitsbergen]; *Turnb. B. E. Pennsylvania*, p. 50 (1860); *Gillett, Ibis*, 1870, p. 308 [Novaya Zemlya]; *R. Gray, B. W. Scott.* p. 422 (1871); *Hengl, Ibis*, 1872, p. 64 [Novaya Zemlya; Waigats I.]; *id. J. f. O.* 1872, p. 124 [Novaya Zemlya; Waigats]; *Dresser, B. Europe*, viii. p. 575, pl. 622 (1877); *Blakist. & Pryer, Ibis*, 1878, p. 211 [Yezo; Kurile Is.]; *Neale, P. Z. S.* 1882, p. 653; *Seebohm, Ibis*, 1882, p. 369 [Hakodadi], p. 383 [Archangel]; *Blakist. & Pryer, Tr. As. Soc. Jap.* viii. p. 180 (1880), x. p. 91 (1882); *Saunders, Svensk. Fogl.* iii. p. 1114, pl. lxxx. figs. 3, 4 (1885); *Saunders, ed. Farrell, Hist. Brit. B.* iv. p. 77 (1885); *Tachusi u. Homeyer, Orn.*, 1886, p. 174 [local names]; *Grondal, Orn.*, 1886, p. 366 [Iceland]; *Saunders, Ill. Man. Brit. B.* p. 685 (1889); *Schalow, J. f. O.* 1895, p. 460 [West Greenland]; *Lilford, Col. Fig. Brit. B.* pt. xxxii. (1896); *Sharpe, Handb. B. Gr. Brit.* iv. p. 120 (1897); *Battye, Ibis*, 1897, p. 597 [Spitsbergen]; *Clarke, Ibis*, 1898, p. 270 [Franz Josef Land].
- Uria francesii*, *Leach, Tr. Linn. Soc.* xii. pp. 538, 538 (1817); *Temm, Man. d'Orn.* ed. 2, pt. ii. p. 924 (1820); *Steph. in Shaw's Gen. Zool.* xii. pt. ii. p. 243 (1824); *Werner, Atl. Ois. d'Eur.* pl. 90 (1824); *Schinz, Europ. Faun.* i. p. 360 (1840); *De Kay, N.Y. Zool., Birds*, p. 280 (1844).
- Uria polaris*, *Brehm, Lehrb. Eur. Vog.* pt. ii. p. 931 (1824); *id. Handb. Vog. Deutschl.* p. 984, pl. xlv. fig. 1 (1831).
- Franks's Guillemot, *Steph. in Shaw's Gen. Zool.* xii. pt. ii. p. 243, pl. 62 (1824).
- Brunnich's Guillemot, *Lath. Gen. Hist.* x. p. 78 (1824); *Farrell, Hist. Brit. B.* iii. p. 348 (1843).
- Uria troile*, *Kittl. (nec Linn.), Isis*, 1832, p. 1104; *id. Denke Reise*, i. p. 302, ii. p. 224 (1858); *Finsch, Abh. nat. Ver. Brem.* iii. p. 78 (1872).
- Uria arctica*, *Keys u. Blas. Wirbelt.* p. 237 (1840); *Naum. Nat. Vog. Deutschl.* x.i. p. 535, pl. 333 (1844); *G. R. Gray, List of B.* pt. iii. p. 156 (1844); *Degl. Orn. Europ.* ii. p. 514 (1849); *Baird, B. N. Amer.* p. 914 (1858); *Cassin, P. Ac. Philad.* 1862, p. 324 [Herald I.]; *Degl. & Gerbe, Orn. Europ.* ii. p. 602 (1867); *Brandt, Melang. Biol.* vii. p. 205 (1869); *Dall & Bann. Tr. Chicago Acad.* i. p. 309 (1869) Kodiak I.; St. George I.; *Frösch, Nat. Vog. Europa's*, p. 494 (1870), *Atl.* pl. 59. fig. 6 (1871); *Tacz. Bull. Soc. Z. Fr.* vii. p. 398 (1882) [Kamschatka; Bering I.]; *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 485 (1884); *Palmen, Vega-Exped. Vetensk. Iakttag.* v. p. 385 (1887).
- Catarractes lomvia*, *Bryant, P. Bost. Soc.* viii. p. 140, figs. 1 & 4 (1861).
- Alca brunnicchi*, *Malmgr. Öfver. K. Vet.-Akad. Förh.* p. 111 (1863).

- Alca arra*, *Schl. Mus. Pays-Bas*, vi. *Urinat.* p. 16 (1867).  
*Uria troile*, var. *brünnichii*, *Collett, Forh. Vid. Selsk. Christ.* 1868, p. 192.  
*Lomvia svarbag*, *Coues, P. Ac. Philad.* 1868, p. 80.  
*Uria lomvia*, *G. R. Gray, Hand-l. B.* iii. p. 101 (1871); *Tacz. J. f. O.* 1876, p. 203 [Ussuri]; *id. Bull. Soc. Z. Fr.* ii. p. 51 (1877); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 485 (1884); *A. O. U. Check-l.* p. 83 (1886); *Ridgw. Man. N. Am. B.* p. 18 (1887); *Chamberlain, Auk*, vi. p. 213 (1889) [S. Greenland]; *Bishop, Auk*, vi. p. 145 (1889) [Magdalen Is.]; *Averill, Auk*, viii. p. 307 (1891) [Connecticut]; *Stone, P. Ac. Philad.* 1892, p. 146 [Strait of Belisle]; *De Haven, Auk*, xiii. p. 171 (1896) [Virginia]; *Butler, Auk*, xiv. p. 197 (1897) [Indiana].  
*Lomvia arra*, *Coues, Key N. Am. B.* p. 346 (1872); *Barrows, P. Bost. Soc.* xix. p. 160 (1877); *Kumlien, Bull. U.S. Nat. Mus.* xv. p. 105 (1879); *Elliott, Seal-Is. Alaska*, p. 135 (1881); *Goss, Tr. Kansas Acad.* viii. p. 59 (1883) [Bird Rock]; *Nelson, Cruise Corwin*, p. 117 (1883); *Stearns & Coues, N. Engl. B.-life*, ii. p. 398 (1883); *Coues, Key N. Amer. B.* 2nd ed. p. 817 (1884); *Dybowski & Tacz. Bull. Soc. Z. Fr.* ix. p. 147 (1884); *Murdoch, Auk*, ii. p. 63 (1885) [migration].  
*Alca Brünnichii*, *Feilden, Ibis*, 1877, p. 410 [Greenland].  
*Uria lomvia arra*, *Stejn. Bull. U.S. Nat. Mus.* xxix. p. 17 (1885) [Commander Is.]; *Turner, Auk*, ii. p. 159 (1885) [Nearer Is., Alaska]; *A. O. U. Check-l.* p. 83 (1886); *Nelson, Rep. N. H. Alaska*, p. 45 (1887); *Stejn. P. U.S. Nat. Mus.* x. p. 118 (1887) [Commander Is.]; *Ridgw. Man. N. Am. B.* p. 18 (1887); *Tacz. Mém. Acad. St. Pétersb.* xxxix. p. 1217 (1893) [E. Siberia]; *Seale, P. Ac. Philad.* 1898, p. 129.  
*Lomvia arra Brünnichii*, *Dutcher, Auk*, ii. p. 38 (1885) [Long I., N.Y.].  
*Alca troile arra*, *Seebohm, Hist. Brit. B.* iii. p. 388 (1885); *id. Ibis*, 1885, p. 364 [Japan; Kurile Is.].  
*Alca troile Brünnichi*, *Seebohm, Hist. Brit. B.* iii. p. 388 (1885).  
*Alca troile*, *Seebohm, B. Japan*, p. 273 (1890) [part].  
*Lomvia Brünnichii*, *Pearson, Ibis*, 1896, p. 225 [Novaya Zemlya]; 1898, pp. 204-207 [Waigats, etc.].

*Adult in breeding-plumage.* Differs from *U. troile* not only in having the beak shorter and stouter and the culmen more strongly curved, but the upper parts are also greyish-black, in stronger contrast to the sides of the head, chin, and throat, which are deep smoky-brown; the sides of the maxillary tomia are bare to the angle of the gape and not concealed by feathers, as is invariably the case in *U. troile*. Tail composed of 12 feathers. Total length about 19 inches, culmen from feathers on forehead to tip 1.55-1.8, from gape to tip 2.5-3.1, greatest depth of both mandibles at base 0.5-0.65, wing 7.8-9.1, tail 1.9-2.45, tarsus 1.45-1.65, middle toe and claw 2.05-2.3.

*Adult in non-breeding plumage.* Very similar to *U. troile*, but apparently does not assume the white patches on each side of the occiput, all specimens examined having the sides of the head dark to the postorbital crease.

*Young in down.* Very similar to the young of *U. troile*.

According to Dr. Stejneger the young bird about six months old has the basal part of the tomia feathered.



Specimens from Bering Sea are on an average slightly smaller than those from the North Atlantic.

*Hab.* Arctic Ocean, coasts of the North Atlantic and Bering Sea, visiting Norway in winter and more rarely the British Isles.

|                                     |                                                                |                                         |
|-------------------------------------|----------------------------------------------------------------|-----------------------------------------|
| <i>a c.</i> ♂ ♀ ad. sk.             | Hakodadi, Japan, Feb.-April ( <i>Blakiston &amp; Henson</i> ). | Seeborn Coll.                           |
| <i>d, e.</i> Pull. sk.              | Robben Island, Sea of Ochotsk, July 11.                        | G. E. H. Barrett-Hamilton, Esq. [P.].   |
| <i>f, g.</i> Ad. sk.                | Kurile Is., summer ( <i>O. Snow</i> ).                         | Seeborn Coll.                           |
| <i>h-k.</i> ♂ ad. sk. et st.        | Copper I., Commander Group, Aug.                               | G. E. H. Barrett-Hamilton, Esq. [P.].   |
| <i>l.</i> ♀ ad. sk.                 | Unalaska, May 27 ( <i>E. W. Nelson</i> ).                      | Salvin-Godman Coll.                     |
| <i>m.</i> ♂ ad. sk.                 | Stewart I., Alaska, June ( <i>E. W. N.</i> ).                  | Salvin-Godman Coll.                     |
| <i>n.</i> Ad. sk.                   | N.W. America.                                                  | Capt. Kellett & Lieut. Wood, R.N. [P.]. |
| <i>o.</i> Ad. sk.                   | Port Leopold, Arctic America ( <i>Dr. Robertson</i> ).         | The Admiralty [P.].                     |
| <i>p.</i> Ad. sk.                   | Whalefish Island, Arctic America ( <i>Dr. Robertson</i> ).     | The Admiralty [P.].                     |
| <i>q.</i> Ad. sk.                   | Grand Manan I., New Brunswick, Feb. ( <i>H. Herrick</i> ).     | Salvin-Godman Coll.                     |
| <i>r.</i> ♀ imm. sk.                | Ipswich, Massachusetts ( <i>E. Greenwood</i> ).                | Salvin-Godman Coll.                     |
| <i>s.</i> Ad. sk.                   | Greenland.                                                     | The Admiralty [P.].                     |
| <i>t, u.</i> Ad. et imm. sk.        | Greenland.                                                     | Hume Coll.                              |
| <i>v.</i> ♂ juv. sk. (albino var.). | Frederickshaab, Greenland, Jan. 7 ( <i>P. Müller</i> ).        | Col. H. W. Feilden [P.].                |
| <i>w.</i> Ad. sk.                   | Iceland, summer.                                               | Seeborn Coll.                           |
| <i>x, y.</i> Ad. sk.                | Lat. 71° 50' N., long. 4° W., summer.                          | Capt. D. Gray [P.].                     |
| <i>z.</i> Ad. sk.                   | Spitsbergen, summer.                                           | The Admiralty [P.].                     |
| <i>a', b'.</i> ♂ ad. sk.            | Advent Bay, Spitsbergen, June.                                 | A. Trevor-Battye, Esq. [P.].            |
| <i>c'.</i> Juv. sk.                 | Cape Grant, Franz Josef Land, Aug. 4 ( <i>F. G. Jackson</i> ). | Jackson-Harnsworth Expedition [P.].     |
| <i>d'.</i> Skeleton.                | Spitsbergen, Aug. 11.                                          | Col. H. W. Feilden [P.].                |
| <i>e'-g'.</i> Skulls.               | Spitsbergen.                                                   | A. Trevor-Battye, Esq. [P.].            |

### 3. *Uria grylle*.

Spotted Greenland Dove, *Edwards, N. Hist. B. i.* pl. 50 (1743);

*Pennant, Brit. Zool. ii.* pl. lxxxiii fig. 2 (1776).

Le petit Guillemot noir, *Brisson, Orn. vi.* p. 76 (1760).

Le petit Guillemot rayé, *Brisson, Orn. vi.* p. 78 (1760).

*Uria grylloides*, *Brunn Orn. Bor.* p. 28 (1764).

*Uria balthica*, *Brunn. Orn. Bor.* p. 28 (1764).

- Colymbus grylle*, Linn. *S. N.* i. p. 220 (1766); *Gmel. S. N.* i. pt. ii. p. 584 (1788).
- Cephus lacteolus*, Pallas, *Spicil. Zool.* fasc. v. p. 33 (1769) [Holland].
- Colymbus gryllus*, Müll. *Zool. Dan. Prodr.* p. 18 (1776).
- Black Guillemot, Pennant, *Brit. Zool.* ii. p. 521 (1776); *id. Arct. Zool.* ii. p. 516 (1785); *Lath. Gen. Syn.* iii. pt. ii. p. 332 (1785); *id. Gen. Hist.* x. p. 78 (1824); Selby, *Ill. Brit. Orn.* ii. pl. lxxx. (1834); Yarrell, *Hist. Brit. B.* iii. p. 355 (1843).
- Black Guillemot, var. B, *Lath. Gen. Syn.* iii. pt. ii. p. 333 (1785).
- Black Guillemot, vars. C & E, *Lath. Gen. Syn.* iii. pt. ii. p. 334 (1785).
- White Guillemot, *Lath. Gen. Syn.* iii. pt. ii. p. 335 (1785); *id. Gen. Hist.* x. p. 82 (1824).
- Colymbus lacteolus*, *Gmel. S. N.* i. pt. ii. p. 583 (1788).
- Uria lacteola*, *Lath. Ind. Orn.* ii. p. 798 (1790).
- Uria nivea*, Bonnat, *Tabl. Encycl. Méth.* i. p. 37 (1790).
- Uria grylle* [Brünn. *Orn. Bor.* p. 28 (1764)]; *Lath. Ind. Orn.* ii. p. 797 (1790); Meyer & Wolf, *Taschenb. der Deutschl.* p. 446 (1810); Temm. *Man. d'Orn.* p. 608 (1815); *id. Man. d'Orn.* ed. 2, pt. ii. p. 927 (1820); Valenc. in Choris, *Voy. Pittor. autour du Monde, Aléout.* p. 27, pl. xxii. (1822); Vieill. *Gal. Ois.* ii. p. 236, pl. 294 (1825); Faber, *Isis*, 1827, p. 635 [Iceland]; Werner, *Atl. Ois. d'Eur.* pl. 97 (1828); Schinz, *Nat. Abbild. Vög.* p. 370, pl. 129 (1833); Nutt. *Man. Orn.* p. 523 (1834) [part]; Nilss. *Skand. Faun.* ii. p. 508 (1835); Aud. *Orn. Biogr.* iii. p. 148, pl. ccxix. (1835) [part], v. p. 627, pl. ccxix. (1839); Gould, *B. Eur.* v. pl. 399 (1837); Keys. u. Blas. *Wirbelth.* p. 237 (1840); Schinz, *Europ. Faun.* i. p. 361 (1840); G. R. Gray, *List of B.* pt. iii. p. 157 (1844) [part]; Aud. *B. Amer.* vii. p. 272, pl. cccclxxiv. (1844); G. R. Gray, *Gen. B.* iii. p. 645 (1848); Degl. *Orn. Europ.* ii. p. 316 (1849); Reichenb. *Natatores*, pl. viii. figs. 43-46 (1850); Thomps. *Nat. Hist. Irel.* iii. p. 214 (1851); Kjerboll. *Danm. Fugle*, p. 410, pl. lxii. figs. 1 & 2 (1852); Macgill. *Brit. B.* v. p. 331 (1852); Watters, *N. Hist. B. Irel.* p. 229 (1853); Godman, *Ibis*, 1861, p. 92 [Bodö]; More, *Ibis*, 1865, p. 450 [Great Britain]; Degl. & Gerbe, *Orn. Europ.* ii. p. 602 (1867); Coues, *P. Ac. Philad.* 1868, p. 68 [part]; Brandt, *Mélang. Biol.* vii. p. 207 (1869) [part]; Gould, *B. Gr. Britain*, v. pl. 49 (1869); G. R. Gray, *Hand-l. B.* iii. p. 101 (1871); R. Gray, *B. W. Scotl.* p. 427 (1871); Coues, *Key N. Amer. B.* p. 345 (1872) [part]; Palmén, *J. f. O.* 1876, p. 65 [Finland]; Dresser, *B. Europe*, viii. p. 581, pl. 623 (1877); Kumlien, *Bull. U.S. Nat. Mus.* xv. p. 104 (1879) [melanistic varieties obtained]; Boardman, *Bull. Nutt. Orn. C.* v. p. 190 (1880) [winter plumage]; Maynard, *B. E. N. Amer.* p. 500 (1881); Seebohm, *Ibis*, 1882, p. 383 [Onega Bay]; Samuels, *N. & E. Birds*, p. 567 (1883); Stearns & Coues, *N.-Engl. Bird-life*, ii. p. 396 (1883); Saunders, ed. Yarrell, *Hist. Brit. B.* iv. p. 81 (1885); Diron, *Ibis*, 1885, p. 89 [St. Kilda]; Sunde. *Svensk. Fogl.* iii. p. 1020, pl. lii. figs. 5, 6 (1885); Lütken, *Ornis*, 1885, p. 142 [Denmark]; Booth, *Rough Notes*, iii. pt. xii. (1886); Gröndal, *Ornis*, 1886, pp. 367, 612 [Iceland]; Saunders, *Ill. Man. Brit. B.* p. 687 (1889); Hartert, *Ibis*, 1892, p. 522 [E. Prussia]; Lillford, *Col. Fig. Brit. B.* pt. xxiii. (1893); Collett, *Forh. Vidensk.-Selsk. Christ.* 1895, p. 3 [*U. motzfeldi* is a melanism of *U. grylle*]; Schalow, *J. f. O.* 1895, p. 461 [West Greenland]; Pearson, *Ibis*, 1896, p. 213 [Medveji, Russian Lapland].
- Uria leucoptera*, Vieill. *N. Dict. d'Hist. Nat.* xiv. p. 35 (1817).

- Uria arctica*, *Brehm, Lehrb. Eur. Vög.* pt. ii. p. 923 (1824).  
*Uria motzfeldi*, *Benicken, Isis*, 1824, p. 889 [Greenland].  
*Uria unicolor*, *Faber, Isis*, 1824, p. 981 [Greenland]; *Brehm, Ibis*, 1826, p. 988; *id. Handb. Vög. Deutschl.* p. 985 (1831); *Schinz, Europ. Faun.* i. p. 360 (1840).  
 White-winged Guillemot, *Steph. in Shaw's Gen. Zool.* xii. pt. ii. p. 250, pl. 64 (1824).  
*Uria scapularia*, *Steph. in Shaw's Gen. Zool.* xii. pt. ii. p. 250 (1824) [part].  
 Guillemot, *Mont Orn. Dict.* 2nd ed. p. 233 (1831).  
*Cephus arcticus*, *Brehm, Handb. Vög. Deutschl.* p. 988 (1831).  
*Cephus grylle*, *Brehm, Handb. Vög. Deutschl.* p. 987, pl. xlv. fig. 2 (1831); *Schinz, Nat. Vög.* p. 221, pl. 102 (1853).  
*Grylle groenlandicus*, *Gray (ex Brisson), List Gen. B.* p. 77 (1840).  
*Cephus grylle*, *Naum. Nat. Vög. Deutschl.* xii. p. 461, pl. 330 (1844); *Reichenb. Natatores*, pl. ix. fig. 2234 (1850); *Collett, Forh. Vid. Selsk. Christ.* 1888, p. 101; *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 492 (1884); *Stejn. P. U.S. Nat. Mus.* vii. p. 228 (1884); *A. O. U. Check-l.* p. 81 (1886); *Ridgw. Man. N. Am. B.* p. 16 (1887); *Chamberlain, Auk*, vi. p. 213 (1889) [S. Greenland]; *Bishop, Auk*, vi. p. 145 (1889) [Magdalen Is.]; *Warren, B. Pennsylvania*, p. 9 (1890); *Stone, P. Ac. Philad.* 1892, p. 145 [Disco]; *Sharpe, Handb. B. Gr. Brit.* iv. p. 123, pl. cviii. (1897).  
*Uria mandti*, *Reichenb. (nec Licht.), Natatores*, pl. viii. fig. 47 (1850).  
*Cephus mandtii*, *Reichenb. (nec Licht.), Natatores*, pl. ix. fig. 2233 (1850).  
*Cephus grylle*, var. *variegata*, *Reichenb. Natatores*, pl. ix. fig. 2235 (1850).  
*Cephus carbo*, *Newton (nec Pall.), Ibis*, 1865, p. 518 footnote [Iceland].  
*Grylle columba*, *Fitz. Atl. Nat. Vög.* fig. 341 (1864); *Fritsch, Nat. Vög. Europa's*, p. 495 (1870), *Atl.* pl. 59. figs. 2, 3 (1871).  
*Alca grylle*, *Schl. Mus. Pays-Bas*, vi. Urnat p. 17 (1867) [*nec Kamtschatka*]; *Seebohm, Hist. Brit. B.* iii. p. 383 (1885).  
*Cephus motzfeldi*, *Baird, Brew. & Ridgw. Water-B. N. Am.* ii. p. 497 (1884); *Stejn. P. U.S. Nat. Mus.* vii. p. 229 (1884); *Ridgw. Man. N. Am. B.* p. 17 (1887).  
*Alca mansfeldi*, *Seebohm, B. Japan*, p. 276 (1890).

*Adult in breeding-plumage.* General colour sooty-black with a slight oil-green gloss; greater and median wing-coverts white, the former with the basal half black, sometimes showing as a narrow black band beyond the tips of the overlying coverts; basal third of the inner webs of the primaries and secondaries, as well as the under wing-coverts and axillaries, white. Iris dark brown; bill black; inside of mouth, legs, and feet vermilion-red. Total length about 13 inches, culmen from feathers on forehead to tip 1.4, from gape to tip 1.95, 2, greatest depth of both mandibles at base of culmen 0.4, wing 6-6.2, tail 2, tarsus 1.25-1.3, middle toe and claw 1.7-1.75.

*Adult in non-breeding plumage.* In less mature examples the underparts, including the chin, throat, cheeks, fore-neck, and rest of underparts, are mostly pure white; the top of the head, back, scapulars, and upper tail coverts black, fringed or barred with white, the rump only being mostly white; and the wings are similar to those of the adult in summer plumage. Tail composed of 12 feathers. As age

advances the white winter plumage is less completely assumed, *very old examples remaining in black plumage throughout the year*. This is beautifully shown by the large and almost perfect series of birds procured by Mr. Nikolai Hanson at Christiansund, North Norway.

*Immature* (in August). Above smoky-black, scarcely any of the feathers being fringed with white except those of the nape; the greater and median wing-coverts white, widely tipped with brownish black; the underparts mostly white, except the throat, fore-neck, and chest, which are mostly or largely mixed with smoky-grey, and the feathers of the sides and flanks, which are narrowly fringed with brown at the extremity.

As age advances the back, scapulars, rump, and upper tail-coverts become fringed with white, much as in the more adult bird in winter plumage, but the white tips to the feathers of the rump are much narrower.

*Immature in summer plumage* (about 12 months old). Similar to the adult in breeding-plumage, but the greater and median wing-coverts are tipped with dark smoky-brown, the wings of the first plumage being retained.

*Young in down* uniform sooty-black, rather paler below.

*Hab.* North Atlantic: coasts of North Europe eastwards to the White Sea; British Isles, Faroes, Iceland, S. Greenland, Newfoundland, and South Labrador; in winter extending occasionally as far south as Massachusetts and the north of France.

|                                   |                                                                              |                             |
|-----------------------------------|------------------------------------------------------------------------------|-----------------------------|
| <i>a, b.</i> Ad. et imm. sk.      | Bay of Fundy, Eastern N. America, summer & winter ( <i>G. A. Boardman</i> ). | Salvin-Godman Coll.         |
| <i>c-f.</i> Ad. et imm. sk.       | South Greenland.                                                             | Hume Coll.                  |
| <i>g-i.</i> ♂ ♀ ad. et imm. sk.   | Lichtenfels, S. Greenland, Jan., April, Nov.                                 | Dr. R. Bowdler Sharpe [P.]. |
| <i>k.</i> Ad. sk. (var.)*.        | Iceland.                                                                     | Purchased.                  |
| <i>l.</i> Ad. sk.                 | Vestmanna I., Iceland, winter.                                               | Hume Coll.                  |
| <i>m, n.</i> ♂ ad. et imm. sk.    | Faroe Islands, May, June.                                                    | Col. H. W. Feilden [P.].    |
| <i>o-q.</i> Pull. sk.             | Faroe Islands, July 12 ( <i>H. C. Müller</i> ).                              | Hargitt Coll.               |
| <i>r.</i> ♀ ad. sk.               | Orkney Islands, summer.                                                      | Seebohm Coll.               |
| <i>s, t.</i> ♂ ♀ ad. sk.          | Orkney Islands, May ( <i>E. H.</i> ).                                        | Hargitt Coll.               |
| <i>u-w.</i> ♀ ad. sk.             | Orkney Islands, summer & winter ( <i>J. H. Dunn</i> ).                       | Hargitt Coll.               |
| <i>x.</i> Ad. sk.                 | Orkney Islands, summer.                                                      | Salvin-Godman Coll.         |
| <i>y-b'.</i> ♂ ♀ ad. et imm. sk.  | Stromness, Jan. 13.                                                          | J. G. Millais, Esq. [P.].   |
| <i>c'-i'.</i> ♂ ♀ ad. et imm. sk. | Thurso, Aug.                                                                 | Dr. A. Günther [P.].        |
| <i>k'.</i> ♂ ad. sk.              | St. Kilda, summer.                                                           | Theodore Walker, Esq. [P.]. |

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\* Cf. Newton, *Ibis*, 1865, p. 518 footnote, and Collett, *Forh. Vidensk.-Selsk. Christ.* 1875, p. 3.

|                                       |                                     |                      |
|---------------------------------------|-------------------------------------|----------------------|
| <i>t.</i> Pull. sk.                   | Norway, July ( <i>R. Collett</i> ). | Seeböhm Coll.        |
| <i>m'-t'</i> . ♂ ♀ ad. et<br>imm. sk. | Christiansund, N. Norway,<br>Feb.   | Nikolai Hanson [C.]. |
| <i>u'-z'</i> . ♂ ♀ ad. et<br>imm. sk. | Christiansund, March.               | Nikolai Hanson [C.]. |
| <i>α''</i> . ♀ ad. sk.                | Christiansund, July 27.             | Nikolai Hanson [C.]. |
| <i>θ'-i'</i> . ♂ ♀ ad. et<br>imm. sk. | Christiansund, Aug.                 | Nikolai Hanson [C.]. |
| <i>k'-l'</i> . ♂ ♀ ad. et<br>imm. sk. | Christiansund, Sept.                | Nikolai Hanson [C.]. |
| <i>u'-b'</i> . ♂ ♀ ad. et<br>imm. sk. | Christiansund, Oct.                 | Nikolai Hanson [C.]. |
| <i>α'-f'</i> . ♂ ♀ ad. et<br>imm. sk. | Christiansund, Nov.                 | Nikolai Hanson [C.]. |
| <i>g'-k'</i> . ♂ ♀ ad. et<br>imm. sk. | Christiansund, Dec.                 | Nikolai Hanson [C.]. |
| <i>l'</i> , <i>m'</i> . Skeletons.    | Greenland.                          | Purchased.           |
| <i>n'</i> , <i>o'</i> . ♀ skeletons.  |                                     | Old Coll.            |
| <i>p'-r'</i> . Skeletons.             | Christiansund, Oct., Dec.           | Nikolai Hanson [C.]. |
| <i>s'</i> . Sternum.                  | Stromness.                          | Seeböhm Coll.        |

4. *Uria mandtii*.

*Colymbus grylle*, *Phipps (nec Linn.)*, *Voy. North Pole*, p. 186 (1774) [Spitsbergen].

? *Grylle scapularis*, *Leach in Ross, Voy. N. W. Pass.*, App. p. li (1819).

*Uria mandtii*, *Licht. in Mandt, Observat. etc. Diss. inaug.* p. 30 (1822), cf. *Reinhardt, Ibis*, 1869, p. 240; *Licht. Verz. Doubl.* p. 88 (1823); *Faber, Isis*, 1824, p. 980 [Greenland]; *Keys, u. Blas. Wobbelth* p. 237 (1840); *G. R. Gray, Gen. B.* iii. p. 645 (1848); *Degl. & Gerbe, Orn. Europ.* ii. p. 604 (1867); *G. R. Gray, Hand-l. B.* iii. p. 101 (1871); *Dresser, B. Europe*, viii. p. 587 (1877); *Tacz. Mém. Acad. St. Pétersb.* xxxix. p. 1221 (1893) [E. Siberia]; *Pearson, Ibis*, 1896, p. 225 [Novaya Zemlya]; *Battye, Ibis*, 1897, p. 598 [Spitsbergen]; *Pearson, Ibis*, 1898, pp. 204-207 [Waigats, etc.]; *Clarke, Ibis*, 1898, p. 269 [Franz Josef Land].

*Uria scapularis*, *Steph. in Shaw's Gen. Zool.* xii. pt. ii. p. 250 (1824) [part].

*Uria glacialis*, *Brehm, Lehrb. Eur. Vög.* pt. ii. p. 924 (1824).

? *Uria meisneri*, *Brehm, Lehrb. Eur. Vög.* pt. ii. p. 1006 (1824) [Greenland].

? *Cephus meisneri*, *Brehm, Handb. Vög. Deutschl.* p. 989 (1831).

*Cephus glacialis*, *Brehm, Handb. Vög. Deutschl.* p. 991 (1831).

*Uria grylle*, *Swains. & Richardson (nec Linn.)*, *Faun. Bor.-Amer.* ii. p. 478 (1831) [Tern Island, Arctic America]; *G. R. Gray, List of B.* pt. iii. p. 157 (1844) [part], *Baird, B. N. Amer.* p. 911, pl. xvi. fig. 2 (1858) [Herald I.]; *Cassin, P. Ac. Philad.* 1862, p. 323 [Herald I.]; *Coues, P. Ac. Philad.* 1868, p. 68 [part]; *Brandt, Mélang. Biol.* vii. p. 207 (1869) [part]; *Coues, Key N. Am. B.* p. 345 (1872) [part]; *Finsch, Abh. nat. Ver. Bremen*, iii. p. 78 (1872); *Feldén, Ibis*, 1877, p. 410 [Greenland]; *Merriam, Bull. Nutt. Orn. C.* vii. p. 241 (1882) [Canada]; *Neale, P. Z. S.* 1882, p. 653 [Franz Josef Land]; *Nelson, Cruise Corwin*, p. 117 (1883); *Coues, Key N. Amer. B.* 2nd ed. p. 814 (1884) [part].

*Cepphus grylle*, *Newton (nec Linn.)*, *P. Z. S.* 1864, p. 495 [Spitsbergen].

*Cephus mandti*, *Newton, Ibis*, 1865, p. 517 [Spitsbergen]; *Gillett, Ibis*, 1870, p. 307 [Novaya Zemlya]; *Heugl. Ibis*, 1872, p. 84 [Novaya Zemlya; Waigats I.]; *id. J. f. O.* 1872, p. 124; *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 490 (1884); *Stejn. P. U.S. Nat. Mus.* vii. p. 229 (1884); *id. Bull. U.S. Nat. Mus.* xxix. p. 314 (1885) [Kamschatka]; *A. O. U. Check-l.* p. 82 (1886); *Ridgw. Man. N. Am. B.* p. 16 (1887); *Nelson, Rep. N. H. Alaska*, p. 44 (1887); *Stone, P. Ac. Philad.* 1892, p. 145 [Melville & McCormick Bays].

*Alca grylle*, *Schleg. Mus. Pays-Bas*, vi. *Urinat. spec.* 5, p. 19 (1867) [Kamschatka].

*Grylle mandtii*, *Fritsch, Nat. Vög. Europa's*, p. 496 (1870), *Atl.* pl. 59. fig. 4 (1871).

*Uria grylle*, var. *mandtii*, *Palmén, Vega-Exped. Vetensk. Iakttag.* v. p. 388 (1887).

*Adult in breeding-plumage.* Very similar to *U. grylle*, but distinguished by having the greater wing-coverts white almost to the base, the basal portion being grey, never black; the white on the basal half of the inner webs of the quills extends more than half-way to the extremity: the bill is also distinctly shorter and more slender than in *U. grylle*, and the difference, though difficult to express in words, can be easily appreciated on comparing the two species. Tail composed of 12 feathers. Iris dark brown; bill black; inside of mouth, legs, and feet vermilion-red; claws black. Total length about 12 inches, culmen from feathers on forehead to tip 1.15–1.25, from gape to tip 1.7–1.85, greatest depth of both mandibles at base 0.35–0.38, wing 6.1–6.4, tail 1.8–1.9, tarsus 1.2–1.25, middle toe and claw 1.6–1.7.

*Adult in non-breeding plumage.* Differs from *U. grylle* in having the general colour of the upper parts much whiter, only the crown and middle of the back showing the black bases to the feathers; the wings are similar to those of the adult in summer plumage. Our series is not sufficient to show whether the older examples of this species cease to assume the white winter plumage, but this is probably the case.

*Immature.* Resembles the adult in winter plumage, but the median wing-coverts are tipped with dark brown.

*Hab.* Coasts of circumpolar seas: Novaya Zemlya, Spitsbergen, Franz Josef Land, North Greenland and Arctic America, south to Labrador and Hudson's Bay; Norton Sound, Alaska; East Siberia and Kamschatka.

|                                |                                                                   |                                |
|--------------------------------|-------------------------------------------------------------------|--------------------------------|
| <i>a-c.</i> Ad. et vix ad. sk. | North America.                                                    | Purchased.                     |
| <i>d.</i> Ad. sk.              | North America.                                                    | Hudson Bay Co. [P.].           |
| <i>e.</i> Imm. sk.             | North America.                                                    | B. R. Ross, Esq. [P.].         |
| <i>f.</i> ♀ ad. sk.            | Fort George, Brit. Columbia, July 15 ( <i>C. Drexler</i> ).       | Salvin-Godman Coll.            |
| <i>g.</i> ♀ ad. sk.            | Ice Bay, Alaska ( <i>Dr. Robertson</i> ).                         | Voyage of H.M.S. 'Enterprise.' |
| <i>h i.</i> ♂ ad. et imm. sk.  | St. Michael's, Alaska, Feb., Aug., Sept. ( <i>E. W. Nelson</i> ). | Salvin-Godman Coll.            |
| <i>m.</i> Imm. sk.             | Whalefish Island.                                                 | The Admiralty [P.].            |

|                            |                                                                 |                               |
|----------------------------|-----------------------------------------------------------------|-------------------------------|
| n. Imm. sk.                | Queen's Channel.                                                | Sir E. Belcher [P.].          |
| o. Ad. sk.                 | Northumberland I., Arctic America ( <i>H. G. Dressel</i> ).     | Salvin-Godman Coll.           |
| p. Ad. sk.                 | Beechey Island, June ( <i>Dr. Lyall</i> ).                      | Gould Coll.                   |
| q. Ad. sk.                 | Cypress I. ( <i>Dr. Lyall</i> ).                                | Voyage of H.M.S. 'Plumper'    |
| r. ♀ ad. sk.               | Washington Irving I., Smith Sound, Dec. 12.                     | Col. H. W. Feilden [P.].      |
| s. Ad. sk.                 | Victoria Head, Bache I., Grinnell Land, Sept. 5.                | Col. H. W. Feilden [P.].      |
| t. Imm. sk.                | Winter I., Melville Peninsula.                                  | The Admiralty [P.].           |
| u. ♀ ad. sk.*              | Tern Island, Melville Peninsula, July 30.                       | Sir John Franklin [C.].       |
| v. ♀ ad. sk.               | Fort Chimo, Ungava, July 28 ( <i>L. M. Turner</i> ).            | Salvin-Godman Coll.           |
| w. ♀ ad. sk.               | Gronwater Bay, Labrador, July 25 ( <i>E. Cones</i> ).           | Salvin-Godman Coll.           |
| x, y. Ad. et imm. sk.      | Godbout, Quebec, Canada, Feb. ( <i>N. A. Comeau</i> ).          | Salvin-Godman Coll.           |
| z. Imm. sk.                | Greenland.                                                      | The Admiralty [P.].           |
| a' c'. ♂ ♀ ad. sk.         | N. Greenland, lat. 79°-82° N., July, Aug.                       | Col. H. W. Feilden [P.].      |
| d'. Ad. sk.                | Spitsbergen.                                                    | The Admiralty [P.].           |
| e'. Ad. sk.                | Advent Bay, Spitsbergen, July 2.                                | Col. H. W. Feilden [P.].      |
| f', g'. ♂ ad. et imm. sk.  | Advent Bay, Spitsbergen, June.                                  | A. Trevor-Battye, Esq. [P.].  |
| h'. Imm. sk.               | Van Mijen's Bay, Spitsbergen, Aug. 12.                          | A. Trevor-Battye, Esq. [P.].  |
| i'. ♂ ad. sk.              | Cape Starashchin, Spitsbergen, June 18.                         | A. Trevor-Battye, Esq. [P.].  |
| k'. ♂ imm. sk.             | Cape Flora, Franz Josef Land, Aug. 11 ( <i>F. G. Jackson</i> ). | Jackson-Harmsworth Exped [P]. |
| l' o'. ♂ ♀ ad. et imm. sk. | Cape Neale, Franz Josef Land, July 25 ( <i>F. G. J.</i> ).      | Jackson-Harmsworth Exped. [P] |
| p', q'. Skeletons.         | Spitsbergen, Aug. 1.                                            | Col. H. W. Feilden [P.].      |

### 5. *Uria columba*.

Black Guillemot, var. A, *Lath. Gen. Syn.* iii. pt. ii. p. 333 (1785).  
 Black Guillemot, var. D, *Lath. Gen. Syn.* iii. pt. ii. p. 334 (1785).  
*Cepphus columba*, *Pallas, Zoogr. Rosso-As* ii. p. 348 (1811); *Newton, Ibis*, 1865, p. 519; *Baird, Brew. & Ridgw. Water-B. N. Amer* ii. p. 494 (1884); *Turner, Auk*, ii. p. 159 (1885) [Nearer Is., Alaska]; *Stejn. P. U.S. Nat. Mus.* vii. p. 229 (1883) [part]; *id Bull. U.S. Nat. Mus.* xxix. p. 21 (1885) [Commander Is.]; *Evermann, Auk*, iii. p. 88 (1886) [Ventura, California]; *A. O. U. Check-l.* p. 82 (1886); *Stejn. P. U.S. Nat. Mus.* x. p. 118 (1887) [Commander Is.];

\* Cf. Swains. & Rich., *Faun-Bor. Amer.* ii. p. 478 (1831).

- Nelson, Rep. N. H. Alaska*, p. 44 (1887); *Ridgw. Man. N. Amer. B.* p. 17 (1887); *Tacz. Mém. Acad. St. Pétersb.* xxxix. p. 1222 (1893) [E. Siberia]; *Loomis, P. Calif. Acad.* (2) vi. p. 19 (1896) [California]; *Grinnell, Auk*, xv. p. 124 (1898) [Sitka]; *Seale, P. Ac. Philad.* 1898, p. 129 [King's I.].
- Uria grylle*, *Kittl. (nec Linn.)*, *Isis*, 1832, p. 1105; *id. Denkw. Reise*, i. pp. 273, 291, ii. p. 221 (1858).
- Uria columba*, *Keys. u. Blas. Wirbelth.* p. xcii (1840); *Cassin, U. S. Expl. Exped.* p. 346, pl. xxxviii. fig. 1 (1858); *Cassin, in Baird, B. N. Amer.* p. 912, pl. xcvi. fig. 1 (1858); *Cooper & Suckl. N. H. Wash. Terr.* p. 285 (1860); *Cassin, P. Ac. Philad.* 1862, p. 323 [Bering Straits]; *Coues, P. Ac. Philad.* 1868, p. 72; *Brandt, Mélang. Biol.* vii. p. 207 (1869); *Dall & Bann. Tr. Chicago Acad.* i. p. 309 (1869) [Sitka; Kodiak I.]; *G. R. Gray, Hand-l. B.* iii. p. 101 (1871); *Coues, Key N. Amer. B.* p. 345 (1872); ? *Finsch, Abh. nat. Ver. Brem.* iii. p. 78 (1872) [Alexandrovsk, E. Siberia]; *Dall, Avif. Aleut.* p. 11 (1873); *id. P. Calif. Acad.* v. pp. 35, 279 (1873) [Aleutian Is.]; *Barrows, P. Bost. Soc.* xix. p. 159 (1877); *Tacz. Bull. Soc. Z. Fr.* ii. p. 51 (1877), vii. p. 398 (1882) [Bering I.]; *Bean, P. U.S. Nat. Mus.* v. p. 172 (1882) [Sitka]; *Nelson, Cruise Corwin*, p. 117 (1883); *Hartl. J. f. O.* 1883, p. 285 [Alaska]; *Coues, Key N. Amer. B.* 2nd ed. p. 815 (1884); *Dybowski & Tacz. Bull. Soc. Z. Fr.* ix. p. 147 (1884); *Palmén, Vega-Exped. Vetensk. Iakttag.* v. p. 391 (1887).
- Alca columba*, *Seebohm, B. Japan*, p. 275 (1890) [part].

*Adult in breeding-plumage.* Like *U. grylle*, but the bill is stouter and more obtuse at the tip; the plumage is dark slate-black, with a grey rather than a green gloss; the under wing-coverts are mostly smoky-brown, and the white patch on the upper surface of the wing is divided on the outer half by a black V-shaped bar, produced by the basal part of the greater coverts, the outermost of which are black nearly to the extremity; the quills have the basal part of the inner web greyish, never white; tail black, composed of 14 feathers. Iris dark brown; bill black, inside of mouth, legs and feet bright red; claws black. Total length about 14.5 inches, culmen from feathers on forehead to tip 1.35, from gape to tip 1.9, greatest depth of both mandibles at base 0.45, wing 7, tail 2-2.05, tarsus 1.3-1.35, middle toe and claw 1.9.

*Adult in non-breeding plumage.* Very similar to *U. grylle*, but easily distinguished by the V-shaped black patch on the white wing-coverts.

*Immature.* Similar to the adult in winter plumage, but the white wing-coverts are tipped with dark brown, and the white feathers of the underparts are narrowly fringed with the same colour.

*Young in down.* Similar to that of *U. grylle*.

*Hab.* Pacific coast of North America from California to Aleutian Islands and Sitka across Bering Sea, as far west at least as the Commander Islands, and perhaps to East Siberia.

*a, b.* ♂ ♀ ad. sk. Bering I., Commander Group, G. E. H. Barrett-Hamilton, Esq. [P.].  
July 12.



|                          |                                                            |                                        |
|--------------------------|------------------------------------------------------------|----------------------------------------|
| c, d. Ad. sk.            | Bering Straits.                                            | Capt. Kellett & Lieut. Wood, R.N. [P]. |
| e, f. ♂ ♀ ad. sk.        | Unalashka I., Alaska, May 23 (E. W. Nelson).               | Salvin-Godman Coll.                    |
| g, h. Ad. et imm. sk.    | N.W. coast of North America.                               | Purchased.                             |
| i, k. ♂ ad. et pull. sk. | Kodiak I., Alaska, July (W. J. Fisher).                    | Salvin-Godman Coll.                    |
| l. ♀ imm. sk.            | Kodiak I. (Dr. Panthén).                                   | Salvin-Godman Coll.                    |
| m, n. ♂ ad. sk.          | Port Neville, Johnston Strait, Brit. Columbia (Dr. Lyall). | Voyage of H.M.S. 'Plumper.'            |
| o. Ad. sk.               | Vancouver I., winter (J. K. Lord).                         | Brit. N. American Boundary Comm. [P].  |
| p. Ad. sk.               | California.                                                | Gould Coll.                            |
| q. ♂ ad. sk.             | Monterey, California, April 5.                             | Mr. Alvin Seale [C].                   |
| r. ♂ ad. sk.             | California.                                                | Salvin-Godman Coll.                    |
| s, t. ♀ ad. sk.          | Farallone Is., California, summer (H. S. Bryant).          | Salvin-Godman Coll.                    |
| u. Ad. sk.               | Farallone Is., June (F. Gruber).                           | Salvin-Godman Coll.                    |
| v. Skeleton.             |                                                            | Purchased.                             |

#### 6. *Uria snowi*.

*Cephus grylle*, *Whitely* (nec Linn.), *Ibis*, 1867, p. 210 [Hakodadi].  
*Uria columba*, ? *Fineck* (nec Pallas), *Abh. nat. Ver. Brem.* iii. p. 18 (1872) [Alexandrovsk, E. Siberia]; *Blakist. & Pryer, Tr. As. Soc. Jap.* x. p. 91 (1882) [Kurile Islands]; *Seebohm, Ibis*, 1884, p. 174 [Kurile Is.; Hakodadi].

*Alea columba*, *Seebohm, B. Japan*, p. 275 (1890) [part].

*Cephus snowi*, *Stegn. Auk*, xiv. p. 201 (1897) [Kurile Islands].

*Adult*. Similar to *U. columba*, but the wings are either entirely black, or with narrow white tips to the larger coverts, forming at most three narrow white bands. Tail composed of 14 feathers. Measurements as in *U. columba*.

*Immature*. Has most of the greater wing-coverts irregularly marked with white on the sides, giving these parts a somewhat mottled appearance; the underparts are white, the feathers, especially of the chest, sides, and flanks, being fringed with dark brown at the tip.

*Hab.* Kurile Islands, ranging north to Southern Kamschatka and south to Japan, ? East Siberia.

a-c. ♂ ♀ ad. sk. Ketoi I., Kurile Islands, June (O. Snow). Seebohm Coll.

d. ♂ imm. sk. Petropaulowsk, Kamschakta. G. E. H. Barrett-Hamilton, Esq. [P].

#### 7. *Uria carbo*.

*Cephus carbo*, *Pallas, Zoogr. Rosso-As.* n. p. 350, pl. lxxix. (1811) [Bering Sea]; *Reichenb. Natatores*, pl. 111 B. figs. 2937-9 (1850); *Newton, Ibis*, 1865, p. 519; *Baird, Breck. & Ridgw. Water-B. Amer.* ii. p. 496 (1884); *Stegn. P. U.S. Nat. Mus* vii pp 225, 229

(1884); *id.* *Bull. U.S. Nat. Mus.* xxix. p. 22 (1885) [Commander Is.]; *id.* *P. U.S. Nat. Mus.* x. p. 118 (1887) [Commander Is.]; *Ridgw. Man. N. Amer. B.* p. 17 (1887); *Gigl. & Salvad. P. Z. S.* 1887, p. 593 [Corea]; *Tacz. Mém. Acad. St. Pétersb.* xxxix. p. 1224 (1893) [E. Siberia].

*Uria carbo*, *Brandt, Bull. Acad. St. Pétersb.* ii. p. 346 (1837); *G. R. Gray, Gen. B.* iii. p. 645 (1848); *Gould, B. Asia*, vii. pl. 71 (1851); *Middend. Sibir. Reise*, ii. pt. ii. p. 239, pl. xxiii. fig. 6 (1851); *Baird, B. N. Amer.* p. 913, pl. xcvi. (1858); *Schrenck, Reis. Amur-l.* i. p. 496, pl. xvi. fig. 1 [egg] (1859); *Cassin, P. Ac. Philad.* 1862, p. 323 [coast of Japan]; *Coues, P. Ac. Philad.* 1868, p. 73; *Brandt, Mélang. Biol.* vii. p. 206 (1869); *G. R. Gray, Hand-l. B.* iii. p. 101 (1871); *Coues, Key N. Amer. B.* p. 345 (1872); *Swinhoe, Ibis*, 1875, p. 458 [Hakodadi]; *Tacz. J. f. O.* 1876, p. 203 [Ussuri]; *id. Bull. Soc. Z. Fr.* ii. p. 51 (1877) [Abrek Bay]; *Blakist. & Pryer, Ibis*, 1878, p. 211 [Yezo]; *id. Tr. As. Soc. Jap.* viii. p. 180 (1880), x. p. 90 (1882); *Coues, Key N. Amer. B.* 2nd ed. p. 815 (1884).

*Alca carbo*, *Schl. Mus. Pays-Bas*, vi. *Urinat.* p. 17 (1867); *Seebohm, B. Japan*, p. 274 (1890).

*Adult in breeding-plumage.* Bill long and stout, much more robust than in *U. columba*. General colour deep slaty-black, somewhat paler on the underparts, and inclining to brown on the shoulders, under wing-coverts, and axillaries; *orbital region white*, extended posteriorly toward the ear-coverts; feathers above the nasal opening and on the chin and throat inclining to whitish. Tail composed of 14 feathers. Total length about 14·5 inches, culmen from feathers on forehead to tip 1·65, from gape to tip 2·15–2·2, greatest depth of both mandibles at base 0·5, wing 7–7·6, tail 1·85–2·1, tarsus 1·4–1·5, middle toe and claw 1·9–2·1.

*Adult in non-breeding plumage.* Chin, throat, fore-neck, and underparts white, inner webs of the flank-feathers grey.

*Immature* (February). Resembles the adult in winter plumage, but the fore-neck is greyish and the feathers of the sides, flanks, and belly are mostly fringed at the extremity with dark brown.

*Quite young bird* (August). Has the upper parts as in the adult, the white ring round the eye nearly obsolete, the fore-neck, chest, sides, and flanks dark smoky-black, and the rest of the underparts white, widely fringed with brownish-black.

*Hab.* Coasts of North-east Asia, from North Japan to the Kurile Islands and Sea of Ochotsk; eastwards to the Commander Islands.

|                          |                                                           |                             |
|--------------------------|-----------------------------------------------------------|-----------------------------|
| <i>a.</i> Ad. sk.        | Japan.                                                    | Purchased.                  |
| <i>b, c.</i> ♂ ♀ ad. sk. | Hakodadi, Yezo, Japan, March, April ( <i>T. Henson</i> ). | Seebohm Coll.               |
| <i>d.</i> Ad. sk.        | Hakodadi, Jan. ( <i>H. Whitely</i> ).                     | Tweeddale Coll.             |
| <i>e.</i> ♂ ad. sk.      | Hakodadi, May 31 ( <i>T. Blakiston</i> ).                 | Seebohm Coll.               |
| <i>f.</i> ♀ imm. sk.     | Hakodadi, Aug.                                            | Capt. T. Blakiston<br>[P.]. |
| <i>g.</i> Imm. sk.       | Uraga, Hondo, Japan, Feb. 27 ( <i>O. Snow</i> ).          | Seebohm Coll.               |

## 5. BRACHYRHAMPHUS.

Type.

|                                                                            |                |
|----------------------------------------------------------------------------|----------------|
| Brachyrhamphus, Brandt, Bull. Ac. St. Pétersb. ii. p. 346 (1837) . . . . . | B. marmoratus. |
| Apobapton, Brandt, Bull. Ac. St. Pétersb. ii. p. 346 (1837) . . . . .      | B. marmoratus. |
| Anobapton, Bonap. C. R. xlii. p. 774 (1856) . . . . .                      | B. marmoratus. |

Bill elongate and moderately compressed; culmen more or less curved downward towards the tip. Inter-ramal feathering extends slightly beyond a vertical line drawn from the anterior border of the nasal opening, which is exposed and rounded. Tail composed of 14 feathers. Metatarsus shorter than the middle toe and claw. Size small.

*Range.* Coasts and islands of the North Pacific and Bering Sea.

*Key to the Species.*

- A. Culmen from feathers on forehead to tip 0.65-0.95 inch; outer tail-feathers brownish black.
- a. Upper parts barred with rufous chestnut (breeding-plumage); culmen 0.65-0.7 . . . . . *marmoratus*, p. 590.
- b. Upper parts barred with dull tawny and buff (breeding-plumage); culmen 0.8-0.95 . . . . . *perdix*, p. 592.
- B. Culmen from feathers on forehead to tip 0.4; outer tail-feathers white . . . . . *brevirostris*, p. 593.

1. *Brachyrhamphus marmoratus*.

Marbled Guillemot, Pennant, *Arot. Zool.* ii. p. 617, pl. xxii. (1785)  
 'W coast of N America', *Lath Gen. Syn.* iii pt ii p. 336, pl. xvi. (1785), *id. Gen. Hist* x. 1. 83, pl. 171 (1824)

*Colymbus marmoratus*, Gmel. *S. N.* i pt. ii. p. 583 (1788).

*Uria marmorata*, Lath. *Ind. Orn.* ii. p. 709 (1790); *Bonnat. Tabl. Encycl. Meth.* i. p. 37, pl. ix. fig. 4 (1790); *Steph. in Shaw's Gen. Zool.* xii. pt. ii p. 249 (1824); *Autt. Man. Orn.* p. 525 (1834); *Kuttl. Denkw. Reise.* i. p. 244 (1858) [Sitka].

*Brachyrhamphus marmoratus*, Brandt, Bull. Acad. St. Pétersb. ii. p. 346 (1837); *Baird, B. N. Amer.* p. 915 (1858); *Cooper & Suckl. N. H. Wash. Terr.* p. 286 (1860); *Brandt, Mélang. Biol.* vii. p. 208 (1869); *G. R. Gray, Hand-l. B.* iii. p. 100 (1871); *Pelz. Ibis*, 1873, p. 46; *Beun, P. U. S. Nat. Mus.* v. p. 171 (1882) [Sitka]; *Harth. J f O.* 1883, p. 285; *Baird, Brew & Ridgw. Water-B. N. Amer.* ii. p. 499 (1884); *A. O. U. Check-l.* p. 80 (1886); *Stejn. Zeit. ges. Orn.* iii. p. 218 (1886); *Nelson, Rep. N. H. Alaska*, p. 44 (1887); *Ridgw. Man. N. Am. B.* p. 15 (1887); *Loomis, P. Calif. Acad.* (2) vi. p. 19 (1896) [California]; *Cantwell, Auk*, xv. p. 49 (1898) [egg]; *Grimmell, Auk*, xv. p. 124 (1898).

*Brachyrhamphus wrangellii*, Brandt, Bull. Acad. St. Petersb. ii. p. 346 (1837) [Aleutian Is.: winter plumage]; *Baird, B. N. Amer.* p. 917 (1858)

*Uria townsendi*, Aud. *Orn. Biogr.* v. p. 251, pl. cccxxxix. (1839) [mouth of Columbia R.]; *id. B. Amer.* vii. p. 278, pl. cccclxxv. (1844); *G. R. Gray, List of B.* pt. iii. p. 157 (1844).

*Brachyrhamphus marmoratus*, G. R. Gray, *Gen. B.* iii. p. 644 (1848); *Reichenb. Natatores*, pl. vi. figs. 2715-20 (1850); *Sclater, P. Z. S.* 1859, p. 237 [Vancouver Is.]; *Coues, P. Ac. Philad.* 1868, p. 61

[part]; *Dall & Bann. Tr. Chicago Acad.* i. p. 309 (1869) [Sitka]; *Coues, Key N. Am. B.* p. 344 (1872); *Barrows, P. Bost. Soc.* xix. p. 157 (1877); *Nelson, Cruise Corwin*, p. 116 (1883); *Hartl. J. f. O.* 1883, p. 285 [Alaska]; *Coues, Key N. Am. B.* 2nd ed. p. 812 (1884).

*Brachyrhamphus wrangelii*, *G. R. Gray, Gen. B.* iii. p. 644 (1848); *Coues, Pr. Ac. Philad.* 1868, p. 63; *Dall & Bann. Tr. Chicago Acad.* i. p. 310 (1869) [Sitka].

*Anobapton marmorata*, *Licht. Nomencl. Av. Mus. Berol.* p. 105 (1854).

*Brachyrhamphus wrangelli*, *Dall, Avif. Aleut.* p. 11 (1873); *id. P. Calif. Acad.* v. p. 35 (1873) [Aleutian Is.].

**Adult in breeding-plumage.** General colour above black, barred and mottled with rufous chestnut, all the feathers, except the wing-coverts, being black tipped with rufous chestnut; the scapulars and inner flank-feathers rather more coarsely marked than the rest of the upper parts, the former making two rather distinct bands on the back; wing-coverts black, fringed with greyish at the extremity; chin, sides of the head next the throat, and rest of underparts white, heavily mottled (tipped) with smoky-brown; under wing-coverts deep smoky-brown tinged with grey; quills black, paler on the inner webs; tail black, composed of 14 feathers. Total length about 9.5 inches, culmen from feathers on forehead to tip 0.65–0.7, from gape to tip 1.25–1.35, greatest depth of both mandibles at base 0.22, wing 5–5.2, tail 1.25–1.4, tarsus 0.65, middle toe and claw 1.1–1.2.

**Adult in non-breeding plumage.** General colour above blackish grey, all the feathers, except the crown and wing-coverts which are nearly uniform, being brownish black tipped with grey. A white collar round the back of the neck almost completely dividing the crown from the nape; most of the side- and flank-feathers with the inner web smoky-grey; chin, lores, and sides of the head next the throat, as well as the rest of the underparts, pure white; under wing-coverts smoky-grey; scapulars mostly white. Feathering on the lower mandible extending beyond a vertical line drawn from the anterior border of the nostril.

**Immature.** Resembles the adult in winter, but the upper parts lack the dark-grey tips to the feathers, and the white feathers of the chin, throat, and underparts are narrowly fringed with smoky-brown.

**Hab.** Pacific coast of North America and South California to Alaska.

*a-d.* ♂ ♀ ad. sk. Unalashka I., Alaska, May & June (*E. W. Nelson*). Salvin-Godman Coll.

*e.* Ad. sk. Itiuliuk, Unalashka, Nov. 21 (*W. H. Dall*). Salvin-Godman Coll.

*f.* ♀ ad. sk. Kodiak I., Alaska, Mar. 2, (*F. Bischoff*). Salvin-Godman Coll.

*g-i.* Ad. et juv. sk. N.W. coast of America. Purchased.

*k-n.* Ad. et juv. sk. Vancouver I. (*J. K. Lord*). N. American Boundary Comm. [P.].

|                             |                                                            |                               |
|-----------------------------|------------------------------------------------------------|-------------------------------|
| a. Ad. sk.                  | Vancouver I., winter.                                      | Gould Coll.                   |
| p-r. Ad. st. et<br>imm. sk. | Esquimalt Harbour, Van-<br>couver I. ( <i>Dr. Lyall</i> ). | Voy. H.M.S. 'Plumper.'        |
| s. ♀ ad. sk.                | Port Neville, summer ( <i>Dr. Lyall</i> ).                 | Voy. H.M.S. 'Plumper.'        |
| t. Imm. sk.                 | Maple Bay, Vancouver I.,<br>( <i>Dr. Lyall</i> ).          | Voy. H.M.S. 'Plumper.'        |
| u. Ad. sk.                  | Fort Rupert, Vancouver I.,<br>summer ( <i>Dr. Lyall</i> ). | Voy. H.M.S. 'Plumper.'        |
| v. Ad. sk.                  | Puget Sound, Nov. 2 ( <i>Dr. Kennedy</i> ).                | Salvin-Godman Coll.           |
| w. Juv. sk.                 | Columbia River.                                            | Sir E. Belcher [P.].          |
| x, y. Ad. sk.               | British Columbia, summer<br>& winter.                      | Government of Canada<br>[P.]. |

## 2. *Brachyrhamphus perdix*.

*Cephus perdix*, *Pallas, Zoogr. Rosso-As.* ii. p. 351, pl. lxxx. (1811)  
[Sea of Ochotsk].

*Brachyrhamphus wrangelii*, *Finsch (nec Brandt), Abh. nat. Ver. Brem.* iii. p. 79 (1872) [part; Alexandrovsk, E. Siberia]; *Swinhoe, Ibis*, 1875, p. 458 [Hakodadi].

*Uria* sp., *Swinhoe, Ibis*, 1874, p. 160 [Hakodadi].

*Brachyrhamphus marmoratus*, *Tacz. (nec Gmel.) Bull. Soc. Z. Fr.* ii. p. 50 (1877) [Abrek Bay, E. Siberia], viii. p. 345 (1883) [Kamtschatka]; *Dybowski & Tacz. Bull. Soc. Z. Fr.* ix. p. 147 (1884) [Kamtschatka]; *Stejn. Orn. Explor. Kamtsch.* p. 314 (1885).

*Brachyrhamphus kitulitzi*, *Swinh. (nec Brandt) Ibis*, 1875, p. 458 [Hakodadi]; *Blakist. & Pryer, Ibis*, 1878, p. 210 [Hakodadi]; *ibid. Tr. As. Soc. Jap.* viii. p. 180 (1880), x. p. 90 (1882); *Seebohm, Ibis*, 1884, p. 174 [Hakodadi].

*Brachyrhamphus marmoratus*, *Seebohm (nec Gmel.), Ibis*, 1884, p. 30 [Hakodadi].

*Brachyrhamphus wrangeli*, *Seebohm (nec Brandt), Ibis*, 1884, p. 31 [Hakodadi].

*Brachyrhamphus perdix*, *Stejn. Zeit. ges. Orn.* iii. p. 213, pl. vii. (1886); *Ridgw. Man. N. Am. B.* p. 15 (1887); *Tacz. Mém. Acad. St. Petersb.* xxx.x. p. 1211 (1893) [E. Siberia].

*Alca marmorata*, *Seebohm (nec Gmel.), B. Japan*, p. 278 (1890).

*Adult in breeding-plumage.* Resembles *B. marmoratus*, but distinguished by the longer bill, and by having the markings on the upper parts dull tawny and buff instead of rufous chestnut. The chin, cheeks, and throat appear to be mostly white in the full summer plumage, and the white ring round the eye, rarely developed in *B. marmoratus*, is conspicuous. Tail composed of 14 feathers, the outer pairs more or less mottled with pale rufous buff. Total length about 10 inches, culmen from feathers on forehead to tip 0.8-0.95, from gape to tip 1.5, greatest depth of both mandibles at base 0.26, wing 5.1-5.6, tail 1.35, tarsus 0.7, middle toe and claw 1.25.

*Adult in non-breeding plumage.* Very similar to *B. marmoratus*, but distinguished by its longer bill, and generally by the white ring surrounding the eye.

*Immature.* Resembles the adult in non-breeding plumage, but the feathers of the upper parts are narrowly margined at the

extremity with whitish buff, and some of the feathers of the breast and belly are fringed with smoky-brown; the bill is much shorter than in the adult and measures 0·65 inch.

*Hab.* Coasts of North-east Asia from Japan to the Kurile Islands, Kamschatka, and the Sea of Ochotsk.

|                  |                                       |                                   |
|------------------|---------------------------------------|-----------------------------------|
| a. Imm. sk.      | [Japan.]                              | Capt. Kellett & Lieut. Wood [P.]. |
| b. Ad. sk.       | Japan. autumn.                        | H. Whitely [C.].                  |
| c. ♂ ad. sk.     | Hakodadi, Japan, Mar. 23<br>(Henson). | Seebohm Coll.                     |
| d-f. ♂ ♀ ad. sk. | Hakodadi, May & Nov. (T. Blakiston).  | Seebohm Coll.                     |
| et. ♂ ad. st.    |                                       |                                   |
| g. ♀ ad. sk.     | Kurile Islands (O. Snow).             | Seebohm Coll.                     |

### 3. *Brachyrhamphus brevirostris*.

*Uria brevirostris*, Vigors, *Zool. Journ.* iv. p. 357 (1828) [San Blas, Mexico]; *id.* *Zool. Voy. Blossom, Birds*, p. 32 (1839).

*Brachyrhamphus kittlitzii*, Brandt, *Bull. Acad. St. Pétersb.* ii. p. 346 (1837) [Kamschatka]; Baird, *B. N. Amer.* p. 917 (1858); Brandt, *Mélang. Biol.* vii. p. 213 (1869); Tacz. *J. f. O.* 1876, p. 203 [Ussuri]; *id.* *Bull. Soc. Z. Fr.* ii. p. 50 (1879) [Abrek Bay]; Baird, Brew. & Ridgw. *Water-B. N. Am.* ii. p. 501 (1884); Stejn. *Orn. Explor. Kamtsch.* p. 314 (1885); *id.* *Bull. U.S. Nat. Mus.* xxix. p. 314 (1885); A. O. U. *Check-l.* p. 81 (1886); Nelson, *Rep. N. H. Alaska*, p. 44, pl. i. (1887); Ridgw. *Man. N. Am. B.* p. 15 (1887); Tacz. *Mém. Acad. St. Pétersb.* xxxix. p. 1213 (1893) [E. Siberia].

*Uria antiqua*, Aud. (*nec Gmel.*) *Orn. Biogr.* v. pl. cccii. fig. 2 (1839); *id.* *B. Amer.* vii. p. 263, pl. cccclxx. fig. 2 (1844).

*Brachyrhamphus kittlitzii*, G. R. Gray, *Gen. B.* iii. p. 644 (1848); Coues, *Key N. Am. B.* p. 344 (1872); Nelson, *Cruise Corwin*, p. 117 (1883); Coues, *Key N. Am. B.* 2nd ed. p. 813 (1884); Turner, *Contr. N. Hist. Alaska*, p. 120, pl. ii. (1886); Palmén, *Vega-Exped. Vetensk. Iakttag.* v. p. 393 (1887).

*Brachyrhamphus antiquus*, Reichenb. (*nec Gmel.*) *Natatores*, pl. vi. fig. 2713 (1850).

*Brachyrhamphus brevirostris*, Stejn. *Zeit. ges. Orn.* iii. p. 211 (1886); Ridgw. *Man. N. Am. B.* p. 15 (1887).

*Alca brevirostris*, Seebohm, *B. Japan*, p. 279 (1890).

*Adult in breeding-plumage.* General colour above grey mottled with buff; wing-coverts uniform dark smoky-brown; chin, throat, sides of the head, and chest, as well as the sides and flanks, mottled with white, buff and black, the bases of the feathers being white, the subterminal portion buff, and the terminal bar black; rest of the underparts mostly white, a few of the feathers with a subterminal marking of smoky-brown; under wing-coverts dark umber-brown with a slight ochreous tinge; quills brownish-black, paler on the inner web; middle pair of tail-feathers brownish-black, tipped with white, the remaining pairs white, but the second, third, and fourth pairs have the outer web partially brownish-black. Tail composed of 14 feathers. The inter-ramal feathering extends to a vertical line drawn from the anterior margin of the nostril. Total

length about 9·5 inches, culmen from feathers on forehead to tip 0·4, from gape to tip 1·05, greatest depth of both mandibles at base 0·2-0·21, wing 5-5·7, tail 1·35-1·4, tarsus 0·65, middle toe and claw 1-1·1.

*Adult in non-breeding plumage.* Easily distinguished from the adult of *B. marmoratus* in non-breeding plumage, for, besides the remarkably short bill, the lores and sides of the head *above the eye* are white; the crown, back, and upper parts uniform grey, and the outer tail-feathers white.

*Hab.* Coasts of the North Pacific and Bering Sea: from Japan, the Sea of Ochotsk, and Kamschatka to the Aleutian Islands.

- |                   |                                               |                                            |
|-------------------|-----------------------------------------------|--------------------------------------------|
| a. Ad. sk.        | Kamschatka, winter ( <i>L. Taczanowski</i> ). | Seebohm Coll.                              |
| b. c. ♂ ♀ ad. sk. | Kamschatka, summer ( <i>O. Snow</i> ).        | Seebohm Coll.                              |
| d. Ad. sk.        | [San Blas, Mexico] Aug 9.                     | Sir E. Belcher [P.]                        |
|                   |                                               | [Type of <i>B. brevirostris</i> (Vigors).] |

## 6. MICRURIA.

Bill elongate and moderately compressed; culmen gradually curved downward towards the tip. Inter-ramal feathering extending to a vertical line drawn from the anterior border of the exposed nasal opening, which is oval and covered anteriorly by a horny scale. Tail composed of 12 feathers. Metatarsus about equal to the middle toe and claw. Size small.

*Range.* Coast of California.

### *Key to the Species.*

- |                                            |                            |
|--------------------------------------------|----------------------------|
| A. Lining of wings pure white .....        | <i>hypoleuca</i> , p. 594. |
| B. Lining of wings mostly smoky-grey ..... | <i>craveri</i> , p. 595.   |

### 1. *Micruria hypoleuca*.

*Brachyrhamphus hypoleucus*, *Xantus, P. Ac. Philad.* 1859, pp. 290, 306 [Cape St. Lucas]; *Coues, P. Ac. Philad.* 1858, p. 64; *Elliot, B. N. Amer.* ii pl lxxii. (1860). *Coues, Key N. Am. B.* 2nd ed. p. 813 (1884); *Goss, Auk*, i p. 396 (1884) [S. California].

*Brachyrhamphus hypoleucus*, *Baird, Brew & Ridgw. Water-B. N. Amer.* ii p. 502 (1884); *A. O. U. Check-l.* p. 81 (1886); *Ridgw. Man N. Am. B.* p. 15 (1887); *Mailliard, Auk*, xv. p. 197 (1898) [Monterey].

*Adult in breeding-plumage.* General colour above, including the sides and flanks, uniform dark blackish slate; chin, sides of the head below the line of the gape, a small patch of feathers above and below the eye, and the rest of the underparts, including the *under wing-coverts*, white; quills brownish-black, shading into white on the basal part of the inner web; tail blackish, and composed of 12 feathers. Total length about 8·5 inches, culmen from feathers on forehead to tip 0·75, from gape to tip 1·15-1·25,

greatest depth of both mandibles at base 0·25, wing 4·8, tail 1·3–1·4, tarsus 0·95–1, middle toe and claw 1·05–1·08.

*Hab.* South California to Cape St. Lucas.

*a, b.* ♂ ♀ ad. sk. San Benito I., Lower California, Salvin-Godman Coll. March 29.

## 2. *Micruria craveri*.

*Uria craveri*, *Salvad. Atti Soc. Ital.* viii. p. 387 (1865) [Lower California].

*Brachyrhamphus craveri*, *Coues, P. Ac. Philad.* 1868, p. 66; *Streets, Bull. U.S. Nat. Mus.* vii. p. 32 (1877) [habits]; *Coues, Key N. Amer. B.* 2nd ed. p. 814 (1884).

*Brachyrhamphus craveri*, *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 502 (1884); *A. O. U. Check-l.* p. 81 (1886); *Ridgw. Man. N. Amer. B.* p. 15 (1887).

*Adult.* Differs chiefly from *M. hypoleuca* in having the lining of the wing smoky-grey and the tips of the greater and median under wing-coverts indistinctly tipped with white. Tail composed of 12 feathers. "Iris dark brown; bill black; feet green" (*Xantus*). Total length about 8·5 inches, bill from feathers on forehead to tip 0·7, from gape to tip 1·2, greatest depth of both mandibles at base 0·25, wing 4·46, tail 1·3, tarsus 0·95, middle toe and claw about 0·95.

Through the kindness of Count Salvadori I have been enabled to examine the type of this species, which is undoubtedly an adult bird in worn breeding-plumage. It seems to me possible that it may be merely the breeding-plumage of *M. hypoleuca*, as has been already suggested by Dr. T. H. Streets.

*Hab.* South California (near Cape St. Lucas).

## 7. SYNTHLIBORHAMPHUS.

Type.

*Synthliboramphus*, *Brandt, Bull. Ac. St. Pétersb.* ii.

p. 347 (1837)..... *S. antiquus*.

Bill moderately elongate and compressed, the culmen curving gradually downward towards the tip. Inter-ramal feathering extending slightly beyond a vertical line drawn from the anterior border of the exposed nasal opening, which is rounded and overhung anteriorly by a small horny scale. Tail composed of 14 feathers. Metatarsus about equal in length to the middle toe and claw. Size small.

*Range.* Coasts of North Pacific and Bering Sea.

### *Key to the Species in breeding-plumage.*

- I. Forehead without crest; white stripes narrow and confined to the sides of the occiput; black on the throat continued down the middle of the fore-neck ..... *antiquus*, p. 596.
- II. Forehead with elongate crest of narrow black feathers; white stripes broad, commencing on each side of the crest and leaving only the middle of the crown black; grey on throat not continued down middle of fore-neck.... *sumichrasti*, p. 598.



1. *Synthliborhamphus antiquus*.

- Antient Auk, *Pennant, Aret. Zool.* ii. p. 512 (1785).  
 Ancient Auk, *Lath. Gen. Syn.* iii. pt. i. p. 326 (1785); *id. Gen. Hist.* x. p. 70 (1824).  
*Alca antiqua*, *Gmel. S. N.* i. pt. ii. p. 554 (1768); *Lath. Ind. Orn.* ii. p. 795 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 33 (1790); *Nutt. Man. Orn.* p. 536 (1834); *Schl. Mus. Poya-Bay*, vi. *Urinat.* p. 21 (1807); *Seebahn, B. Japan*, p. 276 (1800); *id. Ibis*, 1892, p. 96 [Tau-abima].  
*Uria semicula*, *Pallas, Zoogr. Rosso-As.* ii. p. 367, pl. lxxxv. (1811).  
*Fratercula antiqua*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 42 (1826).  
*Uria antiqua*, *Kittl. Isis*, 1832, p. 1104; *Aud. Orn. Biogr.* v. p. 100, pl. cccii. [fig. 1 only] (1839); *Temm. & Schl. Faun. Jap. Aves*, p. 124, pl. lxxx. (1842); *Aud. B. Amer.* vii. p. 263, pl. cccclxx. [fig. 1 only] (1844); *Schrenck, Reis. Amur-I.* i. p. 499, pl. xvi. figs. 2, 3 [eggs] (1859); *Whately, Ibis*, 1867, p. 209 [Hakodadi]; *Swinh. Ibis*, 1874, p. 166 [Hakodadi].  
*Synthliborhamphus antiquus*, *Brandt, Bull. Acad. St. Pétersb.* ii. p. 347 (1837); *id. Mélang. Biol.* vii. p. 217 (1869); *Tacz. Bull. Soc. Z. Fr.* ii. p. 51 (1877) [Abrek Bay]; *Nelson, Cruise Corwin*, p. 116 (1883); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 504 (1884); *Stejn. Bull. U.S. Nat. Mus.* xxix p. 23 (1885) [Commander I.]; *A. O. U. Check-l.* p. 80 (1886); *Ridgw. Man. N. Am. B.* p. 14 (1887); *Stejn. P. U.S. Nat. Mus.* x. p. 118 (1887) [Commander I.]; *Tacz. Mém. Acad. St. Pétersb.* xxxix. p. 1215 (1893) [E. Siberia]; *Bendire, Auk*, xii. p. 270 (1895) [habits]; *Loonius, P. Calif. Acad.* (2) vi. p. 17 (1896) [California]; *Mailliard, Auk*, xv. p. 197 (1898) [Monterey].  
*Brachyrhamphus brachypterus*, *Brandt, Bull. Acad. St. Pétersb.* ii. p. 346 (1837) [Urischka]; *Baird, B. N. Amer.* p. 916 (1858).  
*Mergulus cirrhocephalus*, *Vigors, Zool. Voy. Blossom, Birds*, p. 32 (1839).  
*Brachyrhamphus antiquus*, *G. R. Gray, List of B.* pt. iii. p. 157, (1844); *Cassin, U.S. Expl. Exped.* p. 348 (1858); *Baird, B. N. Amer.* p. 916 (1858); *G. R. Gray, Hand-l. B.* iii. p. 100 (1871).  
*Brachyrhamphus antiquus*, *G. R. Gray, Gen. B.* iii. p. 644, pl. clxxvii (1848); *Reichenh. Natatores*, pl. vi. figs. 2710-2 & 2714, pl. ix. figs. 2230-32 (1850); *Dall & Bann. Tr. Chicago Acad.* i. p. 310 (1869) [St. George I.; Amak I.; Sitka]; *Dall, P. Calif. Acad.* v. p. 280 (1873) [Aleutian I.]; *Blakiet. & Pryer, Ibis*, 1878, p. 210 [Yezo]; *id. Tr. As. Soc. Jap.* viii. p. 180 (1880), x. p. 90 (1882).  
*Brachyrhamphus brachypterus*, *G. R. Gray, Gen. B.* iii. p. 644 (1848); *Coues, P. Ac. Philad.* 1868, p. 67; *id. Key N. Amer. B.* 2nd ed. p. 814 (1884).  
*Arctica cirrhocephalus*, *G. R. Gray, Gen. B.* iii. p. 645 (1848).  
*Uria cana*, *Kittl. Denkw. Reise*, i. p. 288 (1858).  
*Brachyrhamphus temminckii*, *Cooper & Suckl. (nec Brandt), N. H. Wash. Terr.* p. 287 (1860).  
*Synthliborhamphus antiquus*, *Coues, P. Ac. Philad.* 1868, p. 56; *id. Key N. Amer. B.* p. 344 (1872); *Finsch, Abh. Nat. Ver. Brem.* iii. p. 80 (1872) [Kamschatka, Aleutian Is.]; *Dall, Acif. Aleut.* p. 11 (1873); *id. P. Calif. Acad.* v. p. 35 (1873) [Aleutian Is.]; *Tacz. J. f. O.* 1876, p. 203. *Bean, P. U.S. Nat. Mus.* v. p. 171 (1882) [Sitka]; *Tacz. Bull. Soc. Z. Fr.* viii. p. 345 (1883) [Kamschatka]; *Coues, Key N. Amer. B.* 2nd ed. p. 811 (1884);

*Dybowski & Tacz. Bull. Soc. Z. Fr.* ix. p. 147 (1884); *Sennott, Auk*, i. p. 99 (1884) [Lake Koshkonong, Wisconsin]; *Turner, Auk*, ii. p. 159 (1885) [Nearer Is., Alaska]; *Nelson, Rep. N. H. Alaska*, p. 43 (1887).

*Alca umisuzume, Rickett, Ibis*, 1894, p. 225 [Foochow], 1895, p. 168.

*Adult in breeding-plumage.* General colour above dark slate; the head and neck mostly deep black, of a more sooty tint on the sides of the head, chin, throat, and fore-neck; on each side of the head a band composed of narrow white feathers commencing above the eye and, in some examples, more or less confluent with its fellow on the lower part of the occiput; the black on the fore-neck separated from the hind-neck by a wide white patch extending to the ear-coverts; sides of the chest, sides and flanks black, the former streaked with white; remainder of the underparts as well as the under wing-coverts pure white; quills blackish, becoming white towards the base of the inner web; tail black, composed of 14 feathers. "Iris dark brown; bill whitish-grey, brownish-black along the culmen and towards the base; feet bluish-white, brownish-black at the joints; webs sooty-black, except the portion next the toes which is light blue; back of the metatarsus and soles of feet sooty-black" (*P. A. Holst*). Total length about 10.5 inches, culmen from feathers on forehead to tip 0.55–0.6, from gape to tip 1.1–1.25, greatest depth of both mandibles at base 0.28–0.3, wing 5.1–5.2, tail 1.25–1.45, tarsus 1.05, middle toe and claw 1.15–1.25.

*Adult in non-breeding plumage.* Similar to the above, but the whole of the fore-neck and throat white; the chin and sometimes the upper throat dark grey; the white stripes on the sides of the occiput absent; and the feathers of the sides and flanks mostly white with the inner webs grey. From the following species it may be distinguished by having the ear-coverts smoky-black.

*Hab.* Coasts of the North Pacific: from Japan, the Kurile Islands, Sea of Ochotsk, and Kamschatka to the Commander Group and across Bering Sea to Alaska.

|                       |                                                             |                            |
|-----------------------|-------------------------------------------------------------|----------------------------|
| a. Ad. sk.            | Hamilton I., South Korea, summer.                           | A. G. Wilday, Esq. [P.]    |
| b. ♂ ad. sk.          | Baracouta Harbour, E. Siberia, Sept. ( <i>G. Sterens</i> ). | Howard Saunders, Esq. [P.] |
| c, d. ♂ ♀ ad. sk.     | Tsu-shima, Japan, Mar. 19 ( <i>P. A. Holst</i> ).           | Seebohm Coll.              |
| e. ♂ ad. sk.          | Nagasaki, Feb. 24 ( <i>C. Collingwood</i> ).                | Seebohm Coll.              |
| f, g. ♂ ad. sk.       | Nagasaki, winter ( <i>F. R.</i> ).                          | F. Ringer, Esq. [P.]       |
| h. Ad. sk.            | Yokohama, winter.                                           | H. Pryer, Esq. [C.]        |
| i-n. Ad. sk.          | Yokohama, spring and summer ( <i>H. Pryer</i> ).            | Seebohm Coll.              |
| o. Ad. sk.            | Hakodadi, Jan. 28 ( <i>H. Whitely</i> ).                    | Tweeddale Coll.            |
| p. ♀ ad. sk.          | Hakodadi, April ( <i>T. Blakiston</i> ).                    | Seebohm Coll.              |
| q-t. ♂ ad. sk. et st. | Kurile Is., June ( <i>O. Snow</i> ).                        | Seebohm Coll.              |

|              |                                     |                                       |
|--------------|-------------------------------------|---------------------------------------|
| u. Ad. sk.   | Kamschatka, summer.                 | Frankfort Museum [E].                 |
| v. ♀ ad. sk. | Bering I., Commander Group, July 3. | G. E. H. Barrett-Hamilton, Esq. [P.]. |
| w. Ad. sk.   | N.W. coast of America, summer.      | Sir E. Belcher [P.].                  |
| x. ♂ ad. sk. | Kyska Harbour, July 3 (W. H. Dall). | Salvin-Godman Coll.                   |

## 2. *Synthliboramphus wumizusume*.

- Uria wumizusume*, Temm. *Pl. Cul.* v. pl. 121 [no. 579] (1835) [Coast of Corea and Japan]; *Reichenb. Natatores*, pl. viii. fig. 31 (1850).
- Synthliboramphus temminckii*, Brandt, *Bull. Acad. St. Petersb.* ii. p. 347 (1837); *id. Melang. Biol.* vii. p. 220 (1860).
- Uria wumizusume*, Temm. & Schl. *Faun. Jap.*, *Aves*, p. 123, pl. lxxix. (1842).
- Brachyrhamphus temminckii*, G. R. Gray, *Gen. B.* iii. p. 644 (1848); *Cassin in Perry Exped. Jap.* ii. p. 233 (1857); *Elliot, B. N. Amer.* ii. pl. lxxi. (1869).
- Brachyrhamphus wumizusume*, *Reichenb. Natatores*, pl. vi. figs. 2708-9 (1850).
- Brachyrhamphus temmincki*, Baird, *B. N. Amer.* p. 916 (1858).
- Alca temmincki*, Schl. *Mus. Pays-Bas*, vi. *Urinat.* p. 22 (1867).
- Synthliboramphus wumizusume*, Coues, *P. Ac. Philad.* 1868, p. 58; *id. Key N. Amer. B.* p. 344 (1872).
- Brachyrhamphus wumizusume*, G. R. Gray, *Hand-l. B.* iii. p. 100 (1871).
- Brachyrhamphus wumizusume*, *Blakist. & Pryer. Ibis*, 1878, p. 210 *Ibis ditto*, *id. Tr. As. Soc. Jap.* x. p. 80 (1882).
- Synthliboramphus wumizusume*, Coues, *Key N. Amer. B.* 2nd ed. p. 812 (1884).
- Synthliboramphus wumizusume*, Baird, Brew. & Ridgw. *Water-B. N. Amer.* ii. p. 505 (1884); *A. O. U. Check-l.* p. 80 (1886); *Stejn. P. U. S. Nat. Mus.* ix. p. 524 (1886), x. p. 482 (1887). Idzu, Japan; *Ridgw. Man. N. A. B.* p. 14 (1887). *Nelson, Rep. N. H. Alaska*, p. 44 (1887) [not met with].
- Alca wumizusume*, *Serbohm, B. Japan*, p. 277 (1890).

*Adult in breeding-plumage.* Much like *S. antiquus*, but the forehead ornamented with an elongate crest of narrow black semi-recumbent feathers; only the middle of the crown and occiput black; the white stripes commencing on each side of the crest, much wider and confluent on the hinder part of the crown; the black on the sides of the chest not streaked with white, the dark grey on the throat not extending on to the fore-neck, and the quills brownish-black on the outer web and terminal third of the inner web, the remainder of which is white. Tail greyish black, composed of 14 feathers. Iris dark brown, bill yellowish horn, blackish along the ridge of the culmen and towards the base; legs and feet are apparently very similar in colour to those of *S. antiquus*. Total length about 10·5 inches, culmen from feathers on forehead to tip 0·7, from gape to tip 1·2, greatest depth of both mandibles at base 0·35, wing 4·8, tail 1·4, tarsus 0·9, middle toe and claw 1·1.

*Adult in non-breeding plumage.* Said to be similar to the above, but the crest and white stripes on the head are absent, the throat white, only the chin being light plumbeous, and the sides and flanks white striped with slate-grey.

*Young in down.* Said to be brownish grey above; the back and rump indistinctly streaked with greyish white; and the chin, throat, and rest of the underparts pure white.

*Hab.* Coasts of Japan.

a. Ad. sk.                      Japan, summer.                      Leiden Museum [E.].

## Subfamily II. FRATERCULINÆ.

### 8. PTYCHORHAMPHUS.

Type.

*Ptychoramphus*, Brandt, *Bull. Ac. St. Pétersb.* ii. p. 347  
(1837) ..... *P. aleuticus*.

Bill rather long and stout, the length from the gape to the tip being much less than that of the middle toe and claw; breadth of upper mandible at base greater than the depth; culmen nearly straight; feathering on the lores distant from the posterior margin of the nasal opening by nearly the length of the nasal opening. Head and neck devoid of ornamental plumes. Inter-ramal feathering extends to a vertical line drawn from the posterior border of the nasal opening. Tail composed of 14 feathers. Metatarsus shorter than the middle toe and claw. Size small.

*Range.* Pacific coasts of North America from the Aleutian Islands to Lower California.

#### 1. *Ptychorhamphus aleuticus*.

*Uria aleutica*, Pallas, *Zoogr. Rosso-As.* ii. p. 370 (1811) [Eastern parts of Bering Sea].

*Ptychoramphus aleuticus*, Brandt, *Bull. Acad. St. Pétersb.* ii. p. 347 (1837); *id. Mélang. Biol.* vii. p. 222 (1839); Coues, *Key N. Am. B.* p. 343 (1872); Baird, *Brew. & Ridgw. Water-B. N. Amer.* ii. p. 517 (1884); Stejn. *Bull. U.S. Nat. Mus.* xxix. pp. 27, 314 (1885); A. O. U. *Check-l.* p. 78 (1886); Ridgw. *Man. N. Am. B.* p. 12 (1887); Nelson, *Rep. N. H. Alaska*, p. 40 (1887); Lawrence, *Auk*, ix. p. 353 (1892) [Washington, D.C.]; Loomis, *P. Calif. Acad.* (2) vi. p. 17 (1896) [California].

*Mergulus cassinii*, Gambel, *P. Ac. Philad.* 1845, p. 266 [Coast of California]; *id. J. Ac. Philad.* (2) ii. pl. vi. (1850).

*Phaleris aleutica*, G. R. Gray, *Gen. B.* iii. p. 638 (1848); Coinde, *Rev. Mag. Zool.* 1860, p. 403 [St. Paul's I.].

*Arctica cassinii*, G. R. Gray, *Gen. B.* iii. p. 645 (1848).

*Ptychorhamphus aleuticus*, Baird, *B. N. Amer.* p. 910 (1858); Coues, *P. Ac. Philad.* 1868, p. 52; Elliot, *B. N. Amer.* ii. pl. lxix. (1869); Nelson, *Cruise Coricini*, p. 116 (1883); Coues, *Key N. Amer. B.* 2nd ed. p. 810 (1884); Evermann, *Auk*, iii. p. 88 (1886) [Ventura, California]; Stephens, *Auk*, x. p. 293 (1893) [habits].

*Simorhynchus aleuticus*, Schl. *Mus. Pays-Bas*, vi. *Urinat.* p. 26 (1867).

*Adult.* General colour above uniform slaty-black; sides of the head, chin, throat, fore-neck and chest, as well as the sides and flanks, lighter than the back and of a dark smoky-grey; a small patch of white feathers above the eye; breast and rest of underparts pure white. Tail blackish, composed of 14 feathers. Some specimens have an indistinct patch of white on the throat, and possibly this may indicate the approach of winter plumage. Iris white; bill black, the basal portion of the mandible yellowish; legs and feet bluish and dusky in life. Total length about 9 inches, culmen from feathers on forehead to tip 0.75, from gape to tip 0.9, greatest depth of both mandibles at base 0.4, wing 4.5-4.9, tail 1.4, tarsus 0.95, middle toe and claw 1.3.

*Young in down.* Dark smoky-black, inclining to grey on the breast and belly.

*Hab.* The same as that of the genus.

|                             |                                           |                             |
|-----------------------------|-------------------------------------------|-----------------------------|
| a. Ad. sk.                  | Coast of California.                      | Salvin-Godman Coll.         |
| b. ♂ ad. sk.                | Farallone Is. ( <i>F. Gruber</i> ).       | Salvin-Godman Coll.         |
| c, d. ♂ ad. et<br>pull. sk. | Farallone Is. ( <i>W. E. Bryant</i> ).    | Salvin-Godman Coll.         |
| e. Ad. sk.                  | San Miguel I. ( <i>Capt. S. Forney</i> ). | Salvin-Godman Coll.         |
| f. Ad. sk.                  | San Miguel I., spring.                    | Salvin-Godman Coll.         |
| g, h. ♂ ♀ ad. sk.           | San Geronimo I., March 15.                | A. W. Anthony, Esq.<br>[P.] |

### 9. SIMORHYNCHUS.

*Type.*

|                                                                                                                               |                 |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <i>Simorhynchus</i> , <i>Merrem in Ersch u. Gruber, Encycl.</i> ii.<br>pp. 405-406 (1809), <i>Step. Ach. a.</i> p. 341 (1880) | ♂ cristatellus. |
| <i>Tyrannus</i> , <i>Brandt, Bull. Acad. St. Peterb.</i> ii.<br>p. 348 (1867)                                                 | ♂ cristatellus. |
| <i>Ciccozia</i> , <i>Reichenb. Naturl. Syst. Vog.</i> p. iii (1852)                                                           | ♂ pusillus.     |

Bill rather short, the length from the gape to the tip being much less than that of the middle toe and claw; breadth of upper mandible at base about equal to the depth; culmen curved downward throughout, the ridge rounded; feathering on the lores terminating close to the posterior margin of the nasal opening. Head with ornamental plumes. Inter-ramal feathering extending somewhat beyond a vertical line drawn from the posterior border of the nasal opening. Tail composed of 14 feathers. Metatarsus shorter than the middle toe and claw. Size very small or moderate.

*Range.* Coasts of the North Pacific and Bering Sea; from Japan, the Kurile Islands, and Kamschatka to the Commander Group, and across Bering Sea to Alaska.

#### *Key to the Species.*

- I An elongate frontal crest of narrow dark brown feathers curving forward.
  - a. Belly grey, lores uniform brown; a line of elongate white plumes behind the eye only; size larger, wing 5.5 inches ..... *cristatellus*, p. 601.

6. Belly white; a white patch on the lores; three lines of elongate white plumes above and in front of the eye, behind the eye, and across the lower part of the cheek: size smaller, wing 4·5 inches . . . . . *pygmaeus*, p. 603.
- II. No crest; forehead and lores ornamented with short narrow white plumes; a line of more elongate white plumes behind the eye: size small, wing 3·6–3·9 inches . . . . . *pusillus*, p. 605.

### 1. *Simorhynchus cristatellus*.

- Alca cristatella*, Pallas, *Spicil. Zool.* fasc. v. p. 18, pls. iii. & v. figs. 7–9 (1769) [Japan]; Gmel. *S. N.* i. pt. ii. p. 552 (1788); Lath. *Ind. Orn.* ii. p. 794 (1790); Bonnat. *Tabl. Encycl. Méth.* i. p. 34, pl. xi. fig. 3 (1790).
- Alca tetracula*, Pallas, *Spicil. Zool.* fasc. v. p. 23, pls. iv. & v. figs. 10–12 (1769) [Kamschatka]; Gmel. *S. N.* i. pt. ii. p. 552 (1783); Lath. *Ind. Orn.* ii. p. 794 (1790); Bonnat. *Tabl. Encycl. Méth.* i. p. 34, pl. xi. fig. 4 (1790); Kittl. *Denkw. Reise*, ii. p. 214 (1858).
- Alca cristata*, Müll. *S. N. Suppl.* p. 104 (1776).
- Crested Auk, Pennant, *Arct. Zool.* ii. p. 515 (1785); Lath. *Gen. Syn.* iii. pt. i. p. 323, pl. xcv. fig. 4 (1785); id. *Gen. Hist.* x. p. 67, pl. 170. fig. 4 (1824).
- Dusky Auk, Pennant, *Arct. Zool.* ii. p. 515 (1785); Lath. *Gen. Syn.* iii. pt. i. p. 324, pl. xcv. fig. 3 (1785); id. *Gen. Hist.* x. p. 68, pl. 70. fig. 3 (1824).
- Uria cristatella*, Pallas, *Zoogr. Rosso-As.* ii. p. 370, pl. lxxxvi. (1811).
- Uria dubia*, Pallas, *Zoogr. Rosso-As.* ii. p. 371, pl. lxxxvii. (1811).
- Uria tetracula*, Pallas, *Zoogr. Rosso-As.* ii. p. 371, pl. lxxxviii. (1811).
- Simorhynchus cristatus*, Merrem in Ersch u. Gruber, *Encycl.* ii. p. 406 (1819).
- Crested Stariki, Steph. in Shaw's *Gen. Zool.* xiii. pt. i. p. 47, pl. v. (1826).
- Phaleris tetracula*, Steph. in Shaw's *Gen. Zool.* xiii. pt. i. p. 46 (1826); G. R. Gray, *Gen. B.* iii. p. 638 (1848); Reichenb. *Natatores*, pl. vi. fig. 2703 (1850); Middend. *Sibir. Reise*, ii. pt. ii. p. 239 (1851); Baird, *B. N. Amer.* p. 907 (1858); Dull & Bann. *Tr. Chicago Acad.* i. p. 309 (1869) [Plover Bay, E. Siberia]; Elliot, *B. N. Amer.* ii. pl. lxvii. (1869).
- Phaleris cristatella*, Steph. in Shaw's *Gen. Zool.* xiii. pt. i. p. 47 (1826); Nutt. *Man. Orn.* p. 536 (1834); Vigors, *Zool. Voy. Blossom, Birds*, p. 33 (1839); Aud. *Orn. Biogr.* v. p. 102, pl. cccii. fig. (1839); id. *B. Amer.* vii. p. 253, pl. cccclxvii. (1844); G. R. Gray, *Gen. B.* iii. p. 638 (1848); Reichenb. *Natatores*, pl. vii. figs. 2222–3 (1850); Baird, *B. N. Amer.* p. 906 (1858); Schrenck, *Reis. Amur-l.* i. p. 500, pl. xvi. figs. 4, 5 (1859); Coinde, *Rev. Mag. Zool.* 1860, p. 402 [St. Paul I.]; Whitely, *Ibis*, 1867, p. 209 [Hakodadi]; Harting, *P. Z. S.* 1871, p. 121 [Bering Straits]; Dall, *P. Calif. Acad.* v. pp. 34, 280 (1873) [Aleutian Is.]; id. *Arif. Aleut.* p. 10 (1873); Barrows, *P. Bost. Soc.* xix. p. 155 (1877); Adams, *Ibis*, 1878, p. 442 [Norton Sound]; Seebohm, *Ibis*, 1879, p. 21.
- Phaleris dubia*, Brandt, *Bull. Acad. St. Pétersb.* ii. p. 347 (1837); G. R. Gray, *Gen. B.* iii. p. 638 (1848).

- Tyloramphus cristatellus*, Brandt, *Bull. Acad. St. Pétersb.* ii. p. 348 (1837).
- Phaleria superciliosa*, Bonap. *Comp. List B.* p. 66 (1838).
- Phaleria superciliosa*, Aud. *Orn. Biogr.* v. p. 402, pl. cccii. (1839).
- Tyloramphus cristatellus*, G. R. Gray, *List of B.* pt. iii. p. 133 (1844); *Tacz. J. f. O.* 1876, p. 203 [Ussuri].
- Alca dubia*, Kittl. *Denkw. Reise.* i. p. 300 (1858) [St. Paul I.].
- Simorhynchus cristatellus*, Schl. *Mus. Pays-Bas*, vi. *Uniat.* p. 25 (1807); *Coues, P. Ac. Philad.* 1868, p. 37; Brandt, *Mélang. Biol.* vii. p. 223 (1860); G. R. Gray, *Hand-l. B.* iii. p. 97 (1871); *Coues, Key N. Am. B.* p. 342 (1872); *Finsch, Abh. Nat. Ver. Brem.* iii. p. 81 (1872) [St. George I., Kamtschatka]; *Tacz. Bull. Soc. Z. Fr.* ii. p. 51 (1877) [Abrek Bay]; *Bureau, Bull. Soc. Z. Fr.* iv. p. 51, pl. v. figs. 3-5 (1879); *Elliott, Seal-Is. Alaska*, p. 134 (1881); *Dybowski, Orn. Centralbl.* 1882, p. 23; *Seebohm, Ibis*, 1882, p. 368 [Kurile Is.]; *Tacz. Bull. Soc. Z. Fr.* vii. p. 393 (1882) [Kamtschatka]; *Bean, P. U. S. Nat. Mus.* v. p. 171 (1882) [Bering Strait]; *Nelson, Cruise Curwin*, p. 116 (1883); *Dybowski, Bull. Soc. Z. Fr.* viii. p. 349 (1883); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 512 (1884); *Dybowski & Tacz. Bull. Soc. Z. Fr.* ix. p. 147 (1884); *Coues, Key N. Amer. B.* p. 807 (1884); *Turner, Auk*, ii. p. 159 (1885) [Nearer Is., Alaska]; *P. Allen, Auk*, ii. p. 388 (1885) [Massachusetts]; *Stejn. Bull. U. S. Nat. Mus.* xxix. p. 32, pl. iv. figs. 4, 5 (1885) [Commander Is.]; *A. O. U. Check-l.* p. 79 (1886); *Stejn. P. U. S. Nat. Mus.* x. p. 113 (1887) [Commander Is.]; *Ridgw. Man. N. Am. B.* p. 13 (1887); *Nelson, Rep. N. H. Alaska*, p. 41 (1887); *Palmén, Vega-Expéd. Vetensk. Iakttag.* v. p. 397 (1887); *Tacz. Mém. Acad. St. Pétersb.* xxxix. p. 1231 (1893) [E. Siberia]; *Seale, P. Ac. Philad.* 1893, p. 128 [King's I.].
- Simorhynchus tuberosus*, *Coues, P. Ac. Philad.* 1868, p. 40.
- Simorhynchus tetraculus*, *Coues, P. Ac. Philad.* 1868, p. 43; G. R. Gray, *Hand-l. B.* iii. p. 97 (1871); *Tacz. Bull. Soc. Z. Fr.* ii. p. 52 (1877).
- Phaleria cristatella*, Dull & Bann. *Tr. Chicago Acad.* i. p. 309 (1869) [Kodiak I.]; *Blukst. & Pryer, Tr. As. Soc. Jap.* viii. p. 179 (1880), x. p. 89 (1882).
- Fratercula cristatella*, *Seebohm, B. Japan*, p. 285 (1890).

*Adult in breeding-plumage.* General colour above deep black; sides of the head, chin, throat, and rest of the underparts smoky-grey, gradually merging into the darker colour of the upper parts; on the forehead a long crest of narrow dark brown feathers, strongly curved forward in a semicircle; across the cheek and ear-coverts a band of narrow elongate white plumes. Tail composed of 14 feathers. The basal portion of the bill ornamented with several supplementary horny plates, including a detached semicircular concave plate above the angle of the gape. "Iris nearly white; basal portion of both mandibles bright orange, extremity light bluish horn; inside of mouth flesh-colour; legs and feet bluish slate; webs dark slate; claws horn-colour" (*G. E. H. Barrett-Hamilton*). Total length about 10·5 inches, culmen from feathers on forehead to tip 0·45-0·5, from gape 0·95-1, greatest depth of both mandibles at base 0·45-0·48, wing 5·5, tail 1·4-1·55, tarsus 1·1, middle toe and claw 1·4-1·5.

*Adult in non-breeding plumage.* Similar to the above, but the supplementary ornamental shields on the bill are cast, and the bill appears much smaller and of a dull brownish colour.

*Immature.* Like the adult in non-breeding plumage, but distinguished by the smaller bill and by the absence of the frontal crest and auricular stripes.

*Hab.* Coasts of the North Pacific and Bering Sea: from Japan, the Kurile Islands, Kamschatka to the Commander Group, and across Bering Sea to Alaska.

|                            |                                                                   |                                      |
|----------------------------|-------------------------------------------------------------------|--------------------------------------|
| <i>a.</i> Ad. sk.          | Japan, winter ( <i>H. Whitely</i> ).                              | Tweeddale Coll.                      |
| <i>b.</i> ♀ ad. sk.        | At sea between Yokohama and Hakodadi, Feb. 25.                    | H. Whitely, Esq. [C.].               |
| <i>c-e.</i> Ad. sk.        | Kurile Islands, summer and autumn ( <i>O. Snow</i> ).             | Seebohm Coll.                        |
| <i>f, g.</i> Ad. sk.       | Kurile Islands, summer and winter ( <i>Wossnesenski</i> ).        | Seebohm Coll.                        |
| <i>h.</i> Ad. sk.          | Kamschatka.                                                       | Purchased.                           |
| <i>i-l.</i> ♂ ♀ ad. sk.    | Bering I., Commander Group, July and Dec.                         | G. E. H. Barrett-Hamilton, Esq [P.]. |
| <i>m, n.</i> ♂ ♀ ad. sk.   | St. Paul I., Pribyloff Group, May, June ( <i>H. W. Elliott</i> ). | Salvin-Godman Coll.                  |
| <i>o.</i> ♀ ad. sk.        | St. George I., Pribyloff Group, June 20 ( <i>H. W. E.</i> ).      | Salvin-Godman Coll.                  |
| <i>p-r.</i> Ad. sk.        | N.W. America, summer and winter.                                  | Purchased.                           |
| <i>s.</i> ♀ ad. sk.        | Alaska ( <i>E. W. Nelson</i> ).                                   | Salvin-Godman Coll.                  |
| <i>t-w.</i> Ad. sk. et st. | St. Michael's, Alaska, summer ( <i>E. W. N.</i> ).                | Salvin-Godman Coll.                  |

## 2. *Simorhynchus pygmæus*.

Pigmy Auk, *Pennant, Arct. Zool.* ii. p. 513 (1785) [Bird I., Bering Sea].

Flat-billed Auk, *Lath. Gen. Syn.* iii. pt. i. p. 328 (1785); *id. Gen. Hist.* x. p. 72 (1824).

*Alca pygmæa*, *Gmel. S. N.* i. pt. ii. p. 555 (1788).

*Alca pygmea*, *Lath. Ind. Orn.* ii. p. 796 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 33 (1790).

*Alca kamtschatica*, *Lepechin, Nov. Act. Petropol.* xii. p. 369, pl. 8 (1801).

*Uria crinita*, *Pallas, Zoogr. Rosso-As.* i. p. 301 (1811) [nom. nudum]; *Stejn. Bull. U.S. Nat. Mus.* xxix. p. 25 (1885).

*Uria mystacea*, *Pallas, Zoogr. Rosso-As.* ii. p. 372, pl. lxxxix. (1811).

*Alca cristatella*, *Cur. in Choris, Voy. Pittor. autour du Monde, Aléout.* p. 18, pl. xii. (1822) [I. of St. Lawrence]; *Vicill. Gal. Ois.* ii. p. 242, pl. 297 (1825).

*Phaleris cristatella*, *Temm. (nec Pall.) Pl. Col.* v. pl. 122 [no. 200] (1823); *Schinz, Nat. Abbild. Vög.* p. 374, pl. 130 (1833).

*Mormon superciliosa*, *Licht. Verz. Doubl.* p. 89 (1823).

*Phaleris pygmea*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 48 (1826); *G. R. Gray, Gen. B.* iii. p. 638 (1848); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 510 (1884).

*Phaleris cristella*, *Boie, Isis*, 1826, p. 980.

*Phaleris camtschatica*, *Brandt, Bull. Acad. St. Pétersb.* ii. p. 347



- (1837); *G. R. Gray, Gen. B.* iii. p. 938 (1848); *Reichenb. Natorae*, pl. vi. figs. 2701-2 (1850); *Baird, B. N. Amer.* p. 908 (1858).
- Phalacrocorax mystacea*, *Cassin in Perry Exped. Jap.* ii. p. 234 (1857); *Blakist. & Pryer, Ibis*, 1878, p. 210 (part); *Seebohm, Ibis*, 1879, p. 21; *Blakist. & Pryer, Tr. As. Soc. Jap.* viii. p. 179 (1880), x. p. 89 (1882).
- Simorhynchus kamtschaticus*, *Schl. Mus. Pays-Bas*, vi. *Urnat.* p. 25 (1867); *Coues, P. Ac. Philad.* 1868, p. 41; *Brandt, Mélang. Biol.* vii. p. 227 (1869); *Coues, Key N. Am. B.* p. 342 (1872); *Finsch, Abh. Nat. Ver. Brem.* iii. p. 81 (1872) [Unalashka]; *Dybowski, Orn. Centralbl.* 1882, p. 41; *id. Bull. Soc. Z. Fr.* vii. p. 298 (1882), viii. p. 349 (1883); *Dybowski & Tacz. Bull. Soc. Z. Fr.* ix. p. 147 (1884).
- Simorhynchus cassini*, *Coues, P. Ac. Philad.* 1868, p. 45 [Aleutian Is.]; *Brandt, Mélang. Biol.* vii. p. 235 (1869); *Baird, Tr. Chicago Acad.* i. p. 324, pl. xxxi. fig. 2 (1869); *Dall & Hann, Tr. Chicago Acad.* i. p. 309 (1869) [Ouniamak Pass.].
- Simorhynchus pygmaeus*, *Brandt, Mélang. Biol.* vii. p. 228 (1869); *Ridgw. P. U.S. Nat. Mus.* iii. p. 211 (1880); *Nelson, Cruise Corwin*, p. 116 (1883); *Coues, Key N. Amer. B.* 2nd ed. p. 808 (1884); *Stejn. Bull. U.S. Nat. Mus.* xxix. p. 25, pl. iv. figs. 1, 2 (1885); *Turner, Auk*, ii. p. 159 (1885) [Nearer Is., Alaska], *A. O. U. Check-l.* p. 79 (1886); *Ridgw. Man. N. Am. B.* p. 13 (1887); *Nelson, Rep. N. H. Alaska*, p. 42 (1887); *Stejn. P. U.S. Nat. Mus.* x. p. 118 (1887) [Commander Is.]; *Tacz. Mem. Acad. St. Pétersb.* xxxix. p. 1235 (1883) [E. Siberia].
- Simorhynchus kamtschaticus*, *Bureau, Bull. Soc. Z. Fr.* iv. p. 90, pl. vi. (1879).
- Fratercula pygmaea*, *Seebohm, B. Japan*, p. 286 (1890).

*Adult in breeding-plumage.* General colour very dark slate, becoming paler on the lower breast and shading into white on the belly and under tail-coverts; forehead with an elongate recurved crest of narrow dark feathers; a triangular white patch on the lores, from which spring two bands of narrow white plumes, one passing up the side of the forehead and terminating at the side of the crest in two or three long narrow filaments, the second dividing the cheek from the throat, in addition to these a third band of similar white feathers commencing behind the eye and terminating in three or four narrow plumes; quills and tail dark brown, the latter composed of 14 feathers. "Iris white; bill milky white at tip and at base of lower mandible; rest of bill, including the culmen, upper tomia, and a median cross-band on the lower mandible vivid blood-red; nasal cuirass and a small portion in front of the nostrils, as well as the soft cere at the base, blackish brown; feet light bluish grey, with the joints somewhat brownish violet, soles and webs blackish" (*L. Stejneger*). Total length about 7.5 inches, culmen from feathers on forehead to tip 0.4-0.42, from gape to tip 0.65-0.72, greatest depth of both mandibles at base 0.3-0.3, wing 4.5, tail 1.25-1.35, tarsus 0.85-0.9, middle toe and claw 1.2-1.25.

*Adult in non-breeding plumage.* Appears to be very similar to the above. Apparently, as in *S. cristatellus*, the frontal crest as well

as the elongate tufts of white plumes are retained throughout the year.

*Immature.* Similar to the above, but the crest and ornamental plumes are absent or faintly indicated by a patch of whitish feathers on the lores.

*Young in down.* "Dark smoky-brown above, lighter and of a more greyish tint on the abdomen" (*L. Stejneger*).

*Hab.* Coasts of the North Pacific: from North Japan, the Kurile Islands, and Kamschatka to the Commander Group and across Bering Sea to Alaska.

|                                 |                                          |                                       |
|---------------------------------|------------------------------------------|---------------------------------------|
| a-c. ♂ ad. et imm. sk.          | Kamschatka.                              | Purchased.                            |
| d-k. ♂ ♀ ad. et imm. sk. et st. | Ushisir, Kurile Is. ( <i>O. Snow</i> ).  | Seebohm Coll.                         |
| l. ♀ juv. sk.                   | At sea off the Commander Group, Aug. 19. | G. E. H. Barrett-Hamilton, Esq. [P.]. |
| m. Juv. sk.                     | Copper I., Commander Group, Aug. 10.     | G. E. H. Barrett-Hamilton, Esq. [P.]. |
| n. Skeleton.                    |                                          |                                       |

### 3. *Simorhynchus pusillus*.

*Uria pusilla*, *Pallas, Zoogr. Ross.-As.* ii. p. 373, pl. xc. (1811) [Kamschatka].

Minute Auk, *Luth. Gen. Hist.* x. p. 72 (1824).

*Phaleris corniculatus*, *Eschscholtz, Zool. Atl.* Heft iv. p. 4 (1831).

*Phaleris microceros*, *Brandt, Bull. Acad. St. Pétersb.* ii. p. 347 (1837); *Baird, B. N. Amer.* p. 908 (1858); *Dall & Bann. Tr. Chicago Acad.* i. p. 309 (1869) [Alaska; St. George I.; Plover Bay]; *Harting, P. Z. S.* 1871, p. 121 [Bering Straits].

*Phaleris pygmæa*, *Brandt, Bull. Acad. St. Pétersb.* ii. p. 347 (1837). *Cerorhinca occidentalis*, *Vigors, Zool. Voy. Blossom, Birds*, p. 33 (1839) [St. Lawrence I.].

*Phaleris nodirostris*, *Bonap. Comp. List B.* p. 66 (1838) [descrip. null.]; *Aud. Orn. Biogr.* v. p. 101, pl. cccii. fig. 3 (1839); *id. B. Amer.* vii. p. 255, pl. cccclxviii. (1844); *G. R. Gray, Gen. B.* iii. p. 638, pl. clxxv. (1848); *Reichenb. Natatores*, pl. vi. figs. 2704-5, pl. vii. figs. 2224-5 (1850).

*Ciceronia nodirostris*, *Reichenb. Natürl. Syst. Vög.* p. iii (1852).

*Phaleris pusilla*, *Baird, B. N. Amer.* p. 909 (1858); *Coinde, Rev. Mag. Zool.* 1860, p. 403 [St. Paul I.]; *Cassin, P. Ac. Philad.* 1862, p. 324 [Bering Straits]; *Elliot, B. N. Amer.* ii. pl. lxxviii. (1869); *Dall & Bann. Tr. Chicago Acad.* i. p. 309 (1869) [Alaska]; *Blakist. & Pryer, Tr. As. Soc. Jap.* viii. p. 179 (1880), x. p. 89 (1882).

*Simorhynchus pygmæus*, *Schl. (nec Gmel.) Mus. Pays-Bas*, vi. *Urinat.* p. 23 (1867); *Seebohm, Ibis*, 1884, p. 31 [Hakodadi].

*Simorhynchus microceros*, *Coues, P. Ac. Philad.* 1868, p. 46; *G. R. Gray, Hand-l. B.* iii. p. 98 (1871).

*Simorhynchus pusillus*, *Coues, P. Ac. Philad.* 1868, p. 48; *Brandt, Mélang. Biol.* vii. p. 230 (1869); *Coues, Key N. Am. B.* p. 343 (1872); *Finsch, Abh. Nat. Ver. Brem.* iii. p. 81 (1872) [St. Paul I.]; *Elliot, Seal-Isl. Alaska*, p. 134 (1881); *Coues, Key N. Amer. B.* 2nd ed. p. 808 (1884); *Stejn. Bull. U.S. Nat. Mus.* xxix. p. 35,

- pl. iv. fig. 3 (1885) [Commander Is.]; Turner, *Auk*, ii. p. 150 (1885) [Nearer Is., Alaska]; *A. O. U. Check-l* p. 79 (1886); *Palmen, Vega-Exped. Vetensk. Sakttag.* v. p. 398 (1887); *Nelson, Rep. N. H. Alaska*, p. 42 (1887); *Ridgw. Man. N. Am. B.* p. 13 (1887); *Stejn. P. U. S. Nat. Mus.* x. p. 112 (1887) [Commander Is.]; *Seale, P. Ac. Philad.* 1898, p. 129 [King's I., St. George I.].
- Ciceronia pusilla*, *Tacz. J. f. O.* 1876, p. 203 [Ussuri]; *id. Bull. Soc. Z. Fr.* ii. p. 51 (1877); *Dybowski, Orn. Centralbl.* 1882, p. 28; *Nelson, Cruise Corwin*, p. 114, pl. (1883); *Dybowski, Bull. Soc. Z. Fr.* viii. p. 350 (1883) [Bering I.]; *Dybowski & Tacz. Bull. Soc. Z. Fr.* ix. p. 147 (1884); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 507 (1884); *Tacz. Mém. Acad. St. Pétersb.* xxxix. p. 1229 (1893) [E. Siberia].
- Ciceronia microceros*, *Saunders, Ibis*, 1883, p. 348.
- Fratercula pusilla*, *Seebohm, B. Japan*, p. 287 (1890).

*Adult in breeding-plumage.* General colour above deep black; forehead and lores ornamented with short narrow pointed white plumes, continued backwards in a line across the cheek; a line of longer white plumes commencing behind the eye, and passing across the ear-coverts; chin smoky-black; throat white; fore-neck and upper chest mostly smoky black; rest of the underparts mostly white, more or less mottled, especially on the breast, with smoky-black; inner secondary quills tipped with white; generally a more or less distinct patch of white on the scapulars; lesser and median under wing-coverts dusky, greater coverts white; tail black, composed of 14 feathers. Iris white; terminal half of bill dark reddish, basal half and tubercle dusky (in dry skin). Total length about 6.5 inches, tubercle at base of culmen 0.1, culmen from feathers on forehead to tip 0.35 0.38, from gape to tip 0.6 0.63, greatest depth of culmen at base 0.25 0.28, wing 3.6-3.9, tail 1.2, tarsus 0.75, middle toe and claw 1.05.

*Adult in non-breeding plumage.* Differs from the above in wanting the tubercle at the base of the culmen: the bill is smaller and more compressed, and the entire underparts white, with the exception of the chin and upper part of the throat which are dark smoky-grey, and generally a few feathers of the belly which are tipped with the same colour. "Iris white; bill horny brown, genys and tomia somewhat lighter, extreme tip of lower mandible whitish; feet light whitish cobalt-blue, joints darker inclining to purple; soles and webs blackish" (*L. St. Jacques*).

*Immature.* Similar to the adult in winter, but the bill is smaller and the white plumes on the forehead and lores are absent.

*Young in down.* Said to be uniform sooty-slate, paler and of a more greyish tint on the underparts.

*Hab.* Coasts of the North Pacific: from Japan, the Sea of Ochotsk, and Kamschatka to the Commander Group, and across Bering Sea to Alaska.

|                                 |                                    |               |
|---------------------------------|------------------------------------|---------------|
| <i>a d.</i> ♂ ♀ ad. et imm. sk. | Hakodadi, March ( <i>Henson</i> ). | Seebohm Coll. |
| <i>e</i> ♂ imm. sk.             | Hakodadi, May.                     | Seebohm Coll. |
| <i>f</i> Ad. sk.                | Kamschatka, summer                 | Purchased.    |

|                          |                                                                   |                                      |
|--------------------------|-------------------------------------------------------------------|--------------------------------------|
| <i>g, h. ♂ ♀ ad. sk.</i> | Bering I., Commander Group, winter.                               | G. E. H. Barrett-Hamilton, Esq. [P.] |
| <i>i. Ad. sk.</i>        | Bering Strait, summer.                                            | Purchased.                           |
| <i>k. Ad. sk.</i>        | St. Paul I., Pribyloff Group, summer.                             | G. E. H. Barrett-Hamilton, Esq. [P.] |
| <i>l-t. ♂ ♀ ad. sk.</i>  | St. Paul I., Pribyloff Group, May, June ( <i>H. W. Elliott</i> ). | Salvin-Godman Coll.                  |
| <i>u, v. ♂ ad. sk.</i>   | St. George I., Pribyloff Group, June ( <i>H. W. E.</i> ).         | Salvin-Godman Coll.                  |
| <i>w, x. Ad. sk.</i>     | Alaska, April ( <i>E. W. Nelson</i> ).                            | Salvin-Godman Coll.                  |
| <i>y. Ad. sk.</i>        | St. Michael's, Alaska ( <i>E. W. N.</i> ).                        | Salvin-Godman Coll.                  |

## 10. PHALERIS.

Type.

|                                                                             |                 |
|-----------------------------------------------------------------------------|-----------------|
| Phaleris, <i>Temm. Man. d'Orn.</i> 2nd ed. pt. i. p. cxii (1820).....       | P. psittaculus. |
| Cyclorrhynchus, <i>Kaup, Natürl. Syst.</i> p. 155 (1829)...                 | P. psittaculus. |
| Ombria, <i>Eschscholtz, Zool. Atlas</i> , Heft iv. p. 3, pl. 17 (1831)..... | P. psittaculus. |

Bill deep and compressed, the breadth of the upper mandible at the base being less than the depth, and the length from gape to tip much less than that of the middle toe and claw; culmen rather short and curved throughout; the ridge forming a blunt razor-edge; lower mandible strongly curved upward throughout and terminating in an acute tip; feathering on the lores distant from the posterior margin of the nasal opening by nearly the length of the nasal opening. Sides of the head with ornamental plumes. Inter-ramal feathering extends to a vertical line drawn from the posterior border of the nasal opening. Tail composed of 14 feathers. Metatarsus shorter than the middle toe and claw. Size rather small.

*Range.* Coasts of the North Pacific, from the Kurile Islands across Bering Sea to Alaska.

## 1. Phaleris psittaculus.

- Alca psittacula*, *Pallas, Spicil. Zool.* fasc. v. p. 13, pls. ii. & v. figs. 4-6 (1769) [Bering Sea]; *Gmel. S. N.* i. pt. ii. p. 553 (1788); *Lath. Ind. Orn.* ii. p. 794 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 33, pl. xi. fig. 2 (1790).
- Perroquet Auk*, *Pennant, Arct. Zool.* ii. p. 514 (1785); *Lath. Gen. Syn.* iii. pt. i. p. 325, pl. xcv. fig. 2 (1785); *id. Gen. Hist.* x. p. 69, pl. 70. fig. 2 (1824).
- Lunda psittacula*, *Pallas, Zoogr. Rosso-As.* ii. p. 366, pl. lxxxiv. (1811).
- Simorhynchus psittaculus*, *Merrem, in Ersch u. Gruber, Encycl.* ii. p. 407 (1819); *Schl. Mus. Pays-Bas*, vi. Urinat. p. 24 (1867); *Coues, P. Ac. Philad.* 1868, p. 36; *G. R. Gray, Hand-l. B.* iii. p. 97 (1871); *Coues, Key N. Amer. B.* 2nd ed. p. 803 (1884).
- Phaleris psittacula*, *Temm. Man. d'Orn.* 2nd ed. pt. ii. p. 929 (1820); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 44 (1826); *Nutt. Man. Orn.* p. 534 (1834); *G. R. Gray, Gen. B.* iii. p. 638 (1848); *Fitz. Atl. Nat. Vög.* fig. 343 (1864); *Wahlgren, Jägaref. Tidskrift*, 1867, p. 108 [Sweden]; *Harting, P. Z. S.* 1871, p. 121 [Bering Straits]; *Coues, Key N. Amer. B.* p. 342 (1872); *Vian, Bull.*

- Soc. Z. Fr.* i. p. 1, pl. i. (1870) [Sweden]; *Burrows, P. Boast. Soc.* xix. p. 155 (1877); *Tacz. Bull. Soc. Z. Fr.* ii. p. 52 (1877), viii. p. 343 (1883) [Kamtschatka]; *Elliott, Seal-Is. Alaska*, p. 134 (1881); *Blakist. & Pryer, Tr. As. Soc. Jap.* x. p. 89 (1882); *Bean, P. U.S. Nat. Mus.* v. p. 171 (1882) [Shumagin Is.]; *Nelson, Cruise Corvcom*, p. 115 (1883); *Dybowski & Tacz. Bull. Soc. Z. Fr.* ix. p. 147 (1884); *Tacz. Mém. Acad. St. Pétersb* xxxix. p. 1227 (1893) [E. Siberia]; *Seeborn, Ibis*, 1884, p. 174 [Kurile Is.].
- Cyclorhynchus psittaculus*, *Kaup, Naturl. Syst.* p. 155 (1829); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 515 (1884); *Turner, Auk*, ii. p. 159 (1885) [Nearer Is., Alaska]; *Stejn. Bull. U.S. Nat. Mus.* xxix. p. 38, pl. iv. fig. 6 (1885) [Commander Is.]; *A. O. U. Check-L.* p. 78 (1886); *Stejn. P. U.S. Nat. Mus.* x. p. 119 (1887) [Commander Is.]; *Ridgw. Man. N. Am. B.* p. 12 (1887); *Nelson, Rep. N. H. Alaska*, p. 40 (1887); *Grinnell, Auk*, xv. p. 124 (1898) [Sitka]; *Seale, P. Ac. Philad.* 1898, p. 128 [Point Barrow; St. George I.].
- Ombria psittacula*, *Eschscholtz, Zool. Atl. Heft* iv. p. 3, pl. 17 (1831); *Brandt, Bull. Acad. St. Pétersb.* ii. p. 348 (1837); *Reichenb. Natatores*, pl. vii. figs. 2226-7 (1850); *Middend. Sibir. Reiser*, ii. pt. ii. p. 239 (1851); *Baird, B. N. Amer.* p. 910 (1858); *Brandt, Mélang. Biol.* vii. p. 237 (1839); *Elliott, B. N. Amer.* ii. pl. lxx. (1869); *Finsch, Abh. nat. Ver. Brem.* iii. p. 82 (1872) [Sea of Ochotsk; Kurile Is.]; *Dall, P. Calif. Acad.* v. p. 280 (1873) [Aleutian Is.]; *Bureau, Bull. Soc. Z. Fr.* iv. p. 48, pl. v. figs. 1, 2 (1879); *Dybowski, Orn. Centralbl.* 1882, p. 40; *id. Bull. Soc. Z. Fr.* vii. p. 297 (1882).
- Fratercula psittacula*, *Seeborn, B. Japan*, p. 284 (1890).

**Adult in breeding-plumage.** General colour above deep smoky-black, paler on the head, neck, sides, flanks, and under wing-coverts; breast and rest of underparts white; a band of narrow, elongate white feathers commencing below the eye and continued across the ear-coverts; quills and tail black, the latter composed of 14 feathers. "Iris white; bill salmon-red; nasal shield darker, greyish brown; soft part along the base of the upper tomia whitish flesh-colour; interior of mouth whitish; feet bluish white, tinged with yellow; on the joints a well-defined dusky spot; webs blackish, along the toe bluish white; sides of tarsus and toes, as also the nails, black" (*L. Stejneger*). Total length about 10.5 inches, culmen from feathers on forehead to tip 0.65-0.7, from gape to tip 0.95, greatest depth of both mandibles at base 0.55-0.6, wing 5.7-6, tail 1.55-1.9, tarsus 1.15-1.2, middle toe and claw 1.65-1.7.

**Adult in non breeding plumage.** Resembles the above, but the chin, throat, and fore-neck are white, like the rest of the underparts, only the sides of the throat being mottled with dusky.

According to Dr. L. Stejneger the basal parts of the bill are shed after the breeding-season. The basal portion of the bill is shown to be a more complicated structure than had hitherto been supposed, being made up of at least six separate pieces. The portions cast appear to be quickly renewed, for adult birds in non-breeding plumage have the bill similar to that of the adult in full breeding-plumage.

**Hab.** The same as that of the genus.

|                   |                                                           |                                       |
|-------------------|-----------------------------------------------------------|---------------------------------------|
| a, b. ♂ ad. sk.   | Kurile Islands, June (O. Snow).                           | Seebohm Coll.                         |
| c. ♂ ad. st.      | Commander Islands.                                        | G. E. H. Barrett-Hamilton, Esq. [P.]. |
| d-f. ♂ ♀ ad. sk.  | Bering I., Commander Group, summer.                       | G. E. H. Barrett-Hamilton, Esq. [P.]. |
| g, h. Ad. sk.     | Bering Straits, spring.                                   | Purchased.                            |
| i, j. ♂ ♀ ad. sk. | St. Paul I., Pribyloff Group, June, July (H. W. Elliott). | Salvin-Godman Coll.                   |
| k. Ad. sk.        | St. George I., Pribyloff Group, July 1 (H. W. E.).        | Salvin-Godman Coll.                   |
| l, m. Ad. sk.     | Alaska, April, June (E. W. Nelson).                       | Salvin-Godman Coll.                   |
| n-g. Ad. sk.      | St. Michael's, winter to spring (E. W. N.).               | Salvin-Godman Coll.                   |
| r. Skeleton.      | Kamschatka.                                               | Purchased.                            |
| s. Trunk.         |                                                           | Salvin-Godman Coll.                   |

## 11. CERORHYNCHA.

Type.

|                                                                                                         |                        |
|---------------------------------------------------------------------------------------------------------|------------------------|
| <i>Cerorhinca</i> , Bonap. <i>Ann. Lyc. N. Y.</i> ii. p. 428 (1826).                                    | <i>C. monocerata</i> . |
| <i>Chimerina</i> , Eschscholtz, <i>Zool. Atlas</i> , Heft iii. p. 2, pl. xii. (1829) .....              | <i>C. monocerata</i> . |
| <i>Ceratorrhina</i> , Bonap. <i>Oss. Règ. An.</i> p. 134 (1830); <i>id. Saggio</i> , p. 62 (1831) ..... | <i>C. monocerata</i> . |
| <i>Cerorhina</i> , Brandt, <i>Bull. Acad. St. Pétersb.</i> ii. p. 348 (1837) .....                      | <i>C. monocerata</i> . |
| <i>Ceratorhyncha</i> , { <i>Bonap. Comp. List B.</i> p. 66 (1838).                                      | <i>C. monocerata</i> . |
| <i>Cerorhynca</i> , }                                                                                   |                        |

Bill rather long, the length from gape to tip being about equal to the middle toe and claw; feathering on the lores terminating some distance from the posterior border of the nasal opening. Head and neck with ornamental plumes. Inter-ramal feathering extending to a vertical line drawn from the middle of the nasal opening. During the breeding-season an elevated horny excrescence at the base of the culmen. Tail composed of 16 (rarely 18) feathers. Metatarsus shorter than the middle toe and claw. Size moderate.

*Range.* Coasts and islands of the North Pacific and Bering Sea: from Japan, the Kurile Islands and Kamschatka to the Commander Group, across Bering Sea to Alaska, and south to Lower California.

1. *Cerorhyncha monocerata*.

*Alca monocerata*, Pallas, *Zoogr. Rosso-As.* ii. p. 362 (1811) [Coast of Alaska].

*Phaleris cerorhyncha*, Bonap. *Zool. Journ.* iii. p. 53 (1828).

*Cerorhynca occidentalis*, Bonap. *Ann. Lyc. N. Y.* iv. p. 428 (1828); *Less. Traité d'Orn.* p. 641 (1831).

*Chimerina cornuta*, Eschscholtz, *Zool. Atl.* Heft iii. p. 2, pl. xii. (1829); *Bureau, Bull. Soc. Z. Fr.* iv. p. 43, pl. iv. (1879).

*Cerorhina orientalis*, Brandt, *Bull. Acad. St. Pétersb.* ii. p. 348 (1837).

*Ceratorhyncha occidentalis*, Aud. *Orn. Biogr.* v. p. 104, pl. cccii. fig. (1839).

? *Alca torda*, Temm. & Schl. *Faun. Jap., Aves*, p. 125 (1842).

- Uria occidentalis*, *Aud. B. Amer.* vii. p. 264, pl. cccclxxi. (1844).  
*Cerorhina occidentalis*, *G. R. Gray, Gen. B.* iii. p. 639 (1848).  
*Chimerina monocerata*, *Reichenb. Natatores*, pl. vi. figs. 2706-7 (1850).  
*Ceratorhyncha monocerata*, *Cassin, in Perry Exped. Jap.* ii. p. 233 (1857); *id. U.S. Expl. Exped.* p. 349 (1858); *Whitely, Ibis*, 1867, p. 209 [Hakodadi]; *Coues, P. Ac. Philad.* 1868, p. 28; *Swinhoe, Ibis*, 1874, p. 106 [Hakodadi]; *Blakist. & Pryer, Ibis*, 1878, p. 211 [Yezo]; *id. Tr. As. Soc. Jap.* x. p. 92 (1882).  
*Cerorhina monocerata*, *Cassin, in Baird's B. N. Amer.* p. 905 (1858); *Cooper & Suckl. N. H. Wash. Terr.* p. 284 (1860); *Dall & Bann. Tr. Chicago Acad.* i. p. 309 (1869) [Sitka]; *G. R. Gray, Hand-l. B.* iii. p. 97 (1871); *Tacz. J. f. O.* 1876, p. 203 [Ussuri]; *Bolan, J. f. O.* 1882, p. 341 [Vladivostok]; *Nelson, Rep. N. H. Alaska*, p. 40 (1887).  
*Cerorhina suckleyi*, *Cassin, in Baird's B. N. Amer.* p. 906 (1858); *Cooper & Suckl. N. H. Wash. Terr.* p. 284 (1860).  
*Simorhynchus monoceratus*, *Schl. Mus. Pays-Bas*, vi. *Urinat.* p. 26 (1867).  
*Sagmatorrhina suckleyi*, *Coues, P. Ac. Philad.* 1868, p. 32.  
*Ceratorhina monocerata*, *Brandt, Mélang. Biol.* vii. p. 239 (1869); *Coues, Key N. Amer. B.* p. 341 (1872); *id. Key N. Amer. B.* 2nd ed. p. 805 (1884); *Henshaw, Auk*, ii. p. 387 (1885); *Tacz. Mém. Acad. St. Pétersb.* xxxix. p. 1241 (1893) [E. Siberia].  
*Cerorhyna monocerata*, *Tacz. Bull. Soc. Z. Fr.* ii. p. 52 (1877).  
*Fratercula monocerata*, *Barrows, P. Boat. Soc.* xix. p. 154 (1877); *Seehorn, B. Japan*, p. 283 (1890); *id. Ibis*, 1892, p. 96 [Tsushima].  
*Cerorhyncha monocerata*, *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 520 (1884); *Ridgw. Man. N. Amer. B.* p. 12 (1887).  
*Cerorhincha monocerata*, *Evermann, Auk*, ii. p. 88 (1886) [Ventura, California].  
*Cerorhinca monocerata*, *A. O. U. Check-l.* p. 78 (1886), *Stejn. P. U.S. Nat. Mus.* x. p. 118 (1887) [Comander Is.]; *Loomis, P. Calif. Acad.* (2) vi. p. 16 (1896) [California]; *Grunnell, Auk*, xv. p. 124 (1896) [Sitka].

*Adult in breeding-plumage.* General colour above dark brownish-black; sides of the head, chin, throat, fore-neck, and chest, as well as the sides, flanks, and under wing-coverts, smoky-grey; breast and rest of the underparts white, generally more or less clouded with smoky-grey, a band of elongate narrow white feathers commencing above and behind the eye, and extending along the sides of the occiput; a similar band of somewhat longer feathers commencing at the angle of the gape passes across the cheek; quills and tail-feathers brownish-black, the former paler on the inner web. Tail composed of 16 (in one specimen of 18) feathers. "Iris pale amber; bill orange-yellow, cutting-edges of both upper and lower mandibles dusky, ridge of culmen and anterior and posterior edges of horn black; corner of mouth white; feet whitish yellow, with slight dusky markings at the joints; back of metatarsi and soles of feet blackish" (*P. A. Holst*).

*Adult male.* Total length about 14 inches, horn at base of culmen 0.48, culmen from feathers on forehead to tip 1.4-1.45, from gape

to tip 1·9–2·1, greatest depth of both mandibles at base (without horn) 0·8, wing 7·1–7·3, tail 2·1–2·2, tarsus 1·15–1·25, middle toe and claw 1·7–2.

*Adult female.* Total length about 14 inches, culmen from feathers on forehead to tip 1·3, from gape to tip 1·75, greatest depth of both mandibles at base (without horn) 0·7, wing 7, tail 2·1, tarsus 1·1, middle toe and claw 1·75.

*Adult in non-breeding plumage.* Similar to the above, but the horn-like process absent, and the breast and abdomen more uniform white.

*Immature.* Resembles the adult in winter, but the bands of narrow white feathers on the sides of the head absent, and the bill smaller and of a browner tint.

*Young in down.* Uniform sooty greyish-brown, much like the young of *L. cirrhata*, but somewhat lighter in colour, and with a more slender bill.

*Hab.* The same as that of the genus.

|                            |                                                            |                                |
|----------------------------|------------------------------------------------------------|--------------------------------|
| a. ♂ ad. sk.               | Tsu-shima, Japan, March 19<br>( <i>P. A. Holst</i> ).      | Seebohm Coll.                  |
| b. ♂ ad. sk.               | Nagasaki, Feb. 27.                                         | F. Ringer, Esq. [P.].          |
| c-g. Ad. et imm. sk.       | Yokohama ( <i>H. Pryer</i> ).                              | Seebohm Coll.                  |
| h. ♀ ad. st.               | Hakodadi, April 1 ( <i>H. Whitely</i> ).                   | Gould Coll.                    |
| i. Ad. sk.                 | Hakodadi, May 11 ( <i>H. W.</i> ).                         | Tweeddale Coll.                |
| k, l. ♂ ♀ ad. sk.          | Hakodadi, May 12 ( <i>Henson</i> ).                        | Seebohm Coll.                  |
| m. ♂ ad. sk.               | Hakodadi ( <i>T. Blakiston</i> ).                          | Seebohm Coll.                  |
| n. ♂ imm. sk.              | Hakodadi, April.                                           | Seebohm Coll.                  |
| o. Ad. sk.                 | Kurile Islands ( <i>Wossnesenski</i> ).                    | Seebohm Coll.                  |
| p. Ad. sk.                 | Kamschatka ( <i>Dybowski</i> ).                            | Seebohm Coll.                  |
| q, r. Ad. sk.              | N.W. America, summer.                                      | Purchased.                     |
| s. Ad. sk.                 | N.W. coast of America, winter.                             | J. H. Gurney, Esq.<br>[P.].    |
| t-r. Ad. et juv. sk.       | Fort Rupert, Vancouver I.,<br>May 22 ( <i>Dr. Lyall</i> ). | Voyage of H.M.S.<br>'Plumper.' |
| y. Ad. sk.                 | Puget's Sound, Nov. ( <i>Dr. Piers</i> ).                  | Salvin-Godman Coll.            |
| z. ♂ imm. sk.              | Monterey, California, Jan.                                 | Mr. A. Seale [P.].             |
| a'-e'. ♂ ♀ ad. et imm. sk. | San Diego, Dec. ( <i>H. W. Henshaw</i> ).                  | Salvin-Godman Coll.            |
| f'. Ad. sk.                | San Miguel I., California,<br>spring.                      | Salvin-Godman Coll.            |

## 12. LUNDA.

Type.

|                                                                                          |                      |
|------------------------------------------------------------------------------------------|----------------------|
| Lunda, <i>Pallas, Zoogr. Rosso-As.</i> ii. p. 363 (1811) . . . . .                       | <i>L. cirrhata</i> . |
| Gymnoblepharum, <i>Brandt, Bull. Acad. St. Pétersb.</i> ii. p. 349 (1837) . . . . .      | <i>L. cirrhata</i> . |
| Sagmatorrhina, <i>Bonap. P. Z. S.</i> 1851, p. 202, pl. xlv. . .                         | <i>L. cirrhata</i> . |
| Cheniscus, <i>G. R. Gray [ex Moehring, 1752], Hand-l. B.</i> iii. p. 96 (1871) . . . . . | <i>L. cirrhata</i> . |

Bill very deep and much compressed, the ridge of the culmen forming a blunt razor-edge; the breadth of the upper mandible at the base much less than the depth; the terminal portion of the



upper mandible transversely grooved, the lower mandible entire, and the basal outline of the terminal portion of the upper mandible convex. Inter-ramal feathering scarcely extending to a vertical line drawn from the posterior border of the nasal opening, which is distant from the feathers on the lores by more than its entire length. Tail composed of 16 feathers. Metatarsus shorter than the middle toe and claw; *the inner claw much more strongly curved than the rest.* During the breeding-season a deciduous saddle-shaped shield, widest towards the ridge of the culmen, covers the base of the bill, and on each side of the crown there is a lengthened crest of silky golden feathers.

*Range.* Coasts and islands of the North Pacific and Bering Sea: from North Japan, the Kurile Islands and Kamschatka to the Commander Group, across Bering Sea to Alaska, and south to Lower California. It has been met with on the coast of Maine and off Greenland.

### 1. *Lunda cirrhata.*

*Alca cirrhata*, Pallas, *Spicil. Zool.* fasc. v. p. 7, pls. i. & v. figs. 1-3 (1766) [Kamschatka]; *Gmel. S. N.* i. pt. ii. p. 553 (1788); *Lath. Ind. Orn.* ii. p. 791 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 32, pl. x. fig. 4, pl. xi. fig. 1 (1790); *Moschler, J. f. O.* 1856, p. 335 [Greenland]; *G. R. Gray, Hand-l. B.* iii. p. 96 (1871); *Bolau, J. f. O.* 1880, p. 132.

*Le Macareux de Kamtchatka*, D'Aubent. *Pl. Enl.* x. pl. 52 [no. 761]; *Buff. Hist. Nat.* ix. p. 308 (1783).

Tufted Auk, Pennant, *Arct. Zool.* ii. p. 513 (1785); *Lath. Gen. Syn.* iii. pt. i. p. 313, pl. xcv. fig. 1 (1785); *id. Gen. Hist.* x. p. 57, pl. 170 fig. 1 (1824).

*Lunda cirrhata*, Pallas *Zoogr. Rosso-As.* ii. p. 363, pl. lxxxii (1811); *G. R. Gray, List of B.* pt. iii. p. 152 (1844); *Reichenb. Natatores*, pl. v. figs. 29-31 (1850); *Coinde, Rev. Mag. Zool.* 1860, p. 403 [St. Paul I.]; *Schl. Mus. Pays-Bas*, vi. *Univ.* p. 27 (1867); *Coues, P. Ac. Philad.* 1868, p. 26; *Pelz. Ibis*, 1873, p. 46 [Kamschatka]; *Dybowski, Bull. Soc. Z. Fr.* vii. p. 297 (1882), *id. Orn. Centralbl.* 1882, p. 40; *id. Bull. Soc. Z. Fr.* vii. p. 348 (1883); *Nelson, Cruise Curwin*, p. 115 (1883); *Haird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 532 (1884); *Dybowski & Tacz. Bull. Soc. Z. Fr.* ix. p. 147 (1884); *Turner, Auk*, ii. p. 159 (1885) [Nearer Is., Alaska]; *Allen, Auk*, ii. p. 388 (1885) [Coast of Maine and Greenland, accidental]; *Stejn. Bull. U.S. Nat. Mus.* xxix. p. 43, pls. i. & ii (1885) [Commander Is.]; *A. O. U. Check-l.* p. 77 (1886); *Ridgw. Man. N. Am. B.* p. 10 (1887); *Nelson, Rep. N. H. Alaska*, p. 38, pl. ii. fig. 5 (1887); *Palmén, Vega-Expéd. Vetensk. Akttag.* v. p. 402 (1887); *Stejn. P. U.S. Nat. Mus.* x. p. 119 (1887) [Commander Is.]; *Lawrence, Auk*, ix. p. 41 (1892) [Washington, D.C.]; *Tacz. Mém. Acad. St. Petersb.* xxxix. p. 1243 (1893) [E. Siberia]; *Grinnell, Auk*, xv. p. 124 (1898) [Sitka]; *Seale, P. Ac. Philad.* 1898, p. 127.

*Mormon cirrata*, Naumann, *Isis*, 1821, p. 781, pl. vii. fig. 1.

*Fratereula cirrhata*, Vieill. *Gal. Ois.* ii. p. 240, pl. 296 (1825); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 40 (1826); *Vigors, Zool. Journ.*

- iv. p. 358 (1829); *id.* *Zool. Voy. 'Blossom,' Birds*, p. 33 (1839); *G. R. Gray, Gen. B.* iii. p. 637 (1847); *Cassin, U.S. Expl. Exped.* p. 348 (1858); *id.* *P. Ac. Philad.* 1862, p. 324 [Sea of Ochotak]; *Finsch, Abh. nat. Ver. Brem.* iii. p. 82 (1872) [E. Siberia, Kamchatka, Alaska]; *Coues, Key N. Am. B.* p. 341 (1872); *Barrows, P. Bost. Soc.* xix. p. 151 (1877); *Elliot, Seal-Isl. Alaska*, p. 184 (1881); *Stearns & Coues, N. Engl. B.-life*, ii. p. 395 (1883); *Seebohm, B. Japan*, p. 281 (1890).
- Fratercula carinata*, *Vigors, Zool. Journ.* iv. p. 358 (1829) [N.W. America].
- Mormon cirrhatus*, *Kittl. Isis*, 1831, p. 1104; *id.* *Kupfertaf. Nat. Vög.* i. p. 3, pl. i. fig. 2 (1832); *Schinz, Nat. Abbild. Vög.* p. 373, pl. 130 (1833); *Nutt. Man. Orn.* p. 539 (1834); *Aud. Orn. Biogr.* iii. p. 364, pl. ccxlix. (1835); *id.* *B. Amer.* vii. p. 234, pl. cccclxii. (1844); *Middend. Sibir. Reise*, ii. pt. ii. p. 240 (1851); *Newberry, Rep. Expl. Surv.* vi. pt. iv. p. 110 (1857); *Baird, B. N. Amer.* p. 902 (1858); *Schrenck, Reise Amur-l.* i. p. 503 (1859); *Cooper & Suckl. N. H. Wash. Terr.* p. 283 (1860); *Dall & Bann. Tr. Chicago Acad.* i. p. 308 (1869); *Dall, P. Calif. Acad.* v. pp. 34, 279 (1873) [Aleutian Is.]; *id.* *Avif. Aleut.* p. 10 (1873); *Tacz. J. f. O.* 1876, p. 204 [Ussuri]; *id.* *Bull. Soc. Z. Fr.* ii. p. 52 (1877) [Abrek Bay, E. Siberia]; *Blakist. & Pryer, Ibis*, 1878, p. 210 [Kurile Is.]; *id.* *Tr. As. Soc. Jap.* viii. p. 179 (1880), x. p. 88 (1882) [Kurile Is.]; *Seebohm, Ibis*, 1879, p. 21; *Saunders, Ibis*, 1883, p. 348; *Tacz. Bull. Soc. Z. Fr.* vii. p. 398 (1882) [Bering Is.].
- Sagmatorrhina lathamii*, *Bonap. P. Z. S.* 1851, p. 202, pl. xlv. [immature]; *Coues, P. Ac. Philad.* 1868, p. 31; *Elliot, B. N. Amer.* ii. pl. lxvi. (1869).
- Sagmatorrhina labradoria*, *Cassin (nec Gmel.) in Baird's B. N. Amer.* p. 904 (1858); *Dall & Bann. Tr. Chicago Acad.* i. p. 309 (1869) [Kodiak I.].
- Lunda cirrata*, *Brandt, Mélang. Biol.* vii. p. 244 (1869); *Bureau, Bull. Soc. Z. Fr.* ii. p. 395, pl. v. fig. 4 (1877), iv. p. 32, pl. iii. (1879) [shedding of bill-ornaments].
- Phaleris cirrhata*, *Harting, P. Z. S.* 1871, p. 121 [Bering Straits].
- Fratercula cirrata*, *Coues, Key N. Amer. B.* 2nd ed. p. 804 (1884).

*Adult in breeding-plumage.* General colour black; the crown, back of the neck, and upper parts shining black; the throat, hinder parts of the head, and underparts dark smoky-brown; anterior half of the face white, the two sides being united to one another by narrow white bands across the fore part of the forehead and chin; above the eye a tuft of elongate straw-coloured silky feathers, the posterior ones, which are much the longest, being curved forward; quills dark brown, paler on the inner web; tail black, composed of 16 feathers. "Iris white; terminal part of upper and lower mandibles deep orange-red; basal part light olive-green, almost apple-green along the ridge of the culmen; angle of the mouth and narrow naked strip of skin between the bill and the feathering on the face, as well as the ring round the eye, vermilion; legs and feet bright red; claws horn-colour" (*G. E. H. Barrett-Hamilton*). Total length about 16 inches, culmen from feathers on forehead to tip 2.2-2.3, from gape to tip 1.85-1.9, greatest depth of

both mandibles at base 1.7-1.75, wing 7.5-7.9, tail 2.5-2.65, tarsus 1.3-1.35, middle toe and claw 2.2.

*Adult in non-breeding plumage.* Differs from the above in lacking the long superciliary tufts; the white feathers on the fore part of the face replaced by blackish-grey, and the horny covering of the basal part of the bill absent. "Basal part of the bill dark brown; ring round the eye and feet pale salmon-red" (*L. Stejneger*).

*Immature.* Similar to the adult in non-breeding plumage, but easily distinguished by having the breast and rest of the underparts largely mixed with whitish, only the tips of the feathers being smoky-grey.

In still younger examples the grey tips to the feathers of the chest and belly are less developed, and the underparts have a whiter appearance.

*Nestling\** still partially clad in down. Breast and belly pure white.

*Young in down.* Deep smoky-black, somewhat paler on the underparts.

*Hab.* The same as that of the genus.

|                                |                                                                  |                                                            |
|--------------------------------|------------------------------------------------------------------|------------------------------------------------------------|
| a. Pull. sk.                   | E. coast of Siberia, July.                                       | Purchased.                                                 |
| b-d. ♂ ♀ ad. sk.               | Kurile Islands, July ( <i>O. Snow</i> ).                         | Seebohm Coll.                                              |
| e. Ad. sk.                     | Kamchatka, summer ( <i>O. Snow</i> ).                            | Seebohm Coll.                                              |
| f. ♀ ad. sk.                   | Kamchatka, June 23 ( <i>Dr. Schrenck</i> ).                      | Seebohm Coll.                                              |
| g. ♀ ad. sk.                   | Petropaulowsk, Kamchatka, autumn.                                | G. E. H. Barrett-Hamilton, Esq. [P.].                      |
| h-m. ♂ ♀ ad. sk.               | Bering I., Commander Group, June, July.                          | G. E. H. Barrett-Hamilton, Esq. [P.].                      |
| n p. Ad. et pull. sk.          | Copper I., Commander Group, Aug. 5.                              | G. E. H. Barrett-Hamilton, Esq. [P.].                      |
| q. Ad. sk.                     | Bering Straits.                                                  | Capt Kellett & Lieut. Wood, R. N. [P.].                    |
| r. Ad. sk.                     | Bering Straits.                                                  | Purchased.                                                 |
| s. Imm sk.                     | Bering Straits.                                                  | Purchased (Type of <i>Sagmatorrhina lathamii</i> , Bonap.) |
| t. ♂ ad sk.                    | St. Paul I., Pribiloff Group, July 7-10 ( <i>H. W. Elliott</i> ) | Salvin-Godman Coll.                                        |
| u. Juv. sk.                    | Alaska ( <i>E. W. Nelson</i> ).                                  | Salvin-Godman Coll.                                        |
| v z. ♂ ♀ ad., juv et pull. sk. | St. Michael's, Alaska, June, Sept Oct. ( <i>E. W. N.</i> ).      | Salvin-Godman Coll.                                        |
| a', b'. ♂ ♀ ad. sk             | Stewart I., Alaska, June, Aug. ( <i>E. W. N.</i> ).              | Salvin-Godman Coll.                                        |

\* This was correctly described by Dybowski, but according to Dr. Stejneger the colour of the underparts is not pure white, though in some individuals it is quite light; the latter author is, moreover, of opinion that the grey tipped feathers of more adult birds are not produced by a fresh moult. I find however, that in a full grown young bird (type of *S. lathamii*) there are a number of partially grown breast-feathers, these, unlike those of the adult are all white with grey tips, and similar to those covering the rest of its underparts and it may be that after all Dybowski is right, and that a moult takes place between these two phases.

|                              |                                                  |                                |
|------------------------------|--------------------------------------------------|--------------------------------|
| c'. ♀ ad. sk.                | Kodiak I., Aug. 8.                               | Salvin-Godman Coll.            |
| d'. ♂ ad. sk.                | Rosario Channel, Vancouver I.<br>(Dr. Lyall).    | Voyage of H.M.S.<br>'Plumper.' |
| e', f'. Ad. sk.              | Haro Channel, Vancouver I.<br>(Dr. Lyall).       | Voyage of H.M.S.<br>'Plumper.' |
| g'. Ad. sk.                  | Coast of California (J. Xantus).                 | Salvin-Godman Coll.            |
| h'. Ad. sk.                  | San Francisco, Dec. (E. W.<br>Nelson).           | Salvin-Godman Coll.            |
| i'-m'. ♂ ad. et<br>pull. sk. | Farallone Is., California, April<br>(F. Gruber). | Salvin-Godman Coll.            |
| n'. Skeleton.                | Kamschatka.                                      | Purchased.                     |
| o'. Skull.                   |                                                  |                                |

13. FRATERCULA.

|                                                                              |             |
|------------------------------------------------------------------------------|-------------|
|                                                                              | Type.       |
| Fratercula, Brisson, Orn. vi. p. 81, pl. vi. fig. 2 (1760)....               | F. arctica. |
| Mormon, Illiger, Prodrömus, p. 283 (1811) .....                              | F. arctica. |
| Larva, Vieill. Analyse, p. 67 (1816) .....                                   | F. arctica. |
| Ceratoblepharum, Brandt, Bull. Acad. St. Pétersb. ii. p. 348<br>(1837) ..... | F. arctica. |

Bill very deep and much compressed, the ridge of the culmen forming a blunt razor-edge; the breadth of the upper mandible at the base much less than the depth; the terminal portion of both mandibles grooved, and the basal outline of the terminal portion of the upper mandible concave, or nearly straight and very oblique. Inter-ramal feathering not extending to a vertical line drawn from the posterior border of the nasal opening, which is distant from the feathers on the lores by nearly its entire length. Tail composed of 16 feathers. Metatarsus shorter than the middle toe and claw; *the inner claw much more strongly curved than the rest.*

During the breeding-season a deciduous shield, widest towards the cutting-edge of the mandible, covers the base of the bill, and the eyelids are ornamented with deciduous horny appendages; but there are no ornamental crests.

*Range.* Coasts and islands of the North Pacific, Bering Sea, Arctic Ocean, and North Atlantic.

*Key to the Species in breeding-plumage.*

- I. Sides of the head and chin grey; black collar on the fore-neck not extending beyond the throat; basal half of the mandibles dark slate; nails of the outer toes moderately curved ..... *arctica*, p. 616.
- II. Sides of the head white, with a narrow grey stripe behind the eye; black collar on the fore-neck continued up to the chin; basal half of the mandibles yellow; nails of the outer toes strongly curved ..... *corniculata*, p. 620.

1. *Fratercula arctica*.

- Le Macareux, *Brisson, Orn.* vi. p. 81, pl. vi. fig. 2 (1760); *D'Aubent. Pl. Enl.* x. pl. 51 [no. 275]; *Buff. Hist. Nat. Ois.* ix. p. 358 (1783).
- Puffin, *Edwards, Glean. N. Hist.* pt. iii. pl. 358. fig. 1 (1761); *Pennant, Brit. Zool.* ii. p. 512 (1776); *id. Arct. Zool.* ii. p. 511 (1785); *Yarrell, Hist. Brit. B.* iii. p. 362 (1843).
- Alca deleta*, *Brunn. Orn. Bor.* p. 25 (1764).
- Alca arctica*, *Linn. S. N.* i. p. 211 (1766); *Gmel. S. N.* i. pt. ii. p. 549 (1788); *Lath. Ind. Orn.* ii. p. 792 (1790); *Bonnat. Tabl. Encycl. Méth.* i. p. 31, pl. x. fig. 3 (1790); *G. R. Gray, Hand-l. B.* iii. p. 98 (1871); *Besnard, Bull. Soc. Z. Fr.* i. p. 88 (1876).
- Labrador Auk, *Pennant, Arct. Zool.* ii. p. 512 (1785); *Lath. Gen. Syn.* iii. pt. i. p. 818 (1765); *id. Gen. Hist.* x. p. 63 (1824).
- Puffin Auk, *Lath. Gen. Syn.* iii. pt. i. p. 314 (1765); *id. Gen. Hist.* x. p. 58 (1824).
- Alca labradorica*, *Gmel. S. N.* i. pt. ii. p. 550 (1788); *Bonnat. Tabl. Encycl. Méth.* i. p. 33 (1790).
- Alca labradora*, *Lath. Ind. Orn.* ii. p. 793 (1790).
- Alca canogularis*, *Meyer & Wolf, Taschenb. der Deutschl.* p. 443 (1810).
- Hormou fratercula*, *Temm. Man. d'Orn.* p. 614 (1815); *id. Man. d'Orn.* ed. 2, pt. ii. p. 933 (1820), pt. iv. p. 580 (1840); *Meyer, Appendix to Meyer & Wolf, Taschenb. der Deutschl.* p. 177 (1822); *Schinz, Nat. Abbild. Vog.* p. 372, pl. 130 (1833); *Gould, B. Eur.* v. pl. 403 (1837); *Schinz, Europ. Faun.* i. p. 302 (1840); *Kjærboell, Danm. Fugle*, p. 412, pl. liii. fig. 3 (1852); *Lütken, Orn.* 1885, p. 142, 1886, p. 97 [Denmark]; *Tschusi u. Homeyer, Orn.* 1889, p. 174 [local names]; *Grondal, Orn.* 1886, pp. 307, 613 [Iceland], 1887, pp. 600, 602, 606, *Kornay, J. f. O.* 1893, p. 105 [Tunis].
- Fratercula arctica*, *Leach, Syst. Cat.* p. 42 (1816); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 37, pl. iv. fig. 1 (1826); *G. R. Gray, List of B.* pt. i. p. 152 (1844); *id. Gen. B.* iii. p. 637 (1847); *Degl. Orn. Europ.* ii. p. 521 (1849); *Reichenb. Natatores*, pl. v. figs. 23-25 (1850); *Thomps. Nat. Hist. Irel.* iii. p. 221 (1851); *Walters, N. Hist. B. Irel.* p. 233 (1853); *Wright, Ibis*, 1864, p. 157 [Malta]; *More, Ibis*, 1865, p. 451 [Great Britain]; *Gould, B. Gr. Britain*, v. pl. 51 (1865); *Degl. & Gerbe, Orn. Europ.* ii. p. 608 (1867); *Coues, P. Ac. Philad.* 1868, p. 21; *Collett, Forh. Vid. Selsk. Christ.* 1868, p. 192; *Turnb. B. E. Pennsylvania*, p. 50 (1869); *R. Gray, B. W. Scott.* p. 433 (1871); *Coues, Key N. Am. B.* p. 340 (1872); *Irby, Orn. Gibraltar*, p. 218 (1875); *Barrow, P. Bost. Soc.* xix. p. 153 (1877); *Dresser, B. Europe*, viii. p. 509, pl. 625 (1877); *Bureau, Bull. Soc. Z. Fr.* ii. p. 377, pl. iv. (1877) [shedding of ornaments of bill]; *Coues, Bull. Nutt. Orn. C.* iii. p. 87 (1878); *Kumlien, Bull. U.S. Nat. Mus.* xv. p. 103 (1879); *Bureau, Bull. Soc. Z. Fr.* iv. p. 8, pl. 1 (1879); *Gigl. Ibis*, 1881, p. 220 [Italy]; *Merriam, Bull. Nutt. Orn. C.* vii. p. 241 (1882) [Canada]; *Irby, Ibis*, 1883, p. 190 [Santander]; *Stearns & Coues, N. Engl. B.-life*, ii. p. 394 (1883); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 524 (1884); *Coues, Key N. Amer. B.* 2nd ed. p. 802 (1884); *Serbohm, Hist. Brit. B.* iii. p. 364 (1885); *Dixon, Ibis*, 1885, pp. 91, 361 [St. Kilda].

- Saunders, ed. Yarrell's Hist. Brit. B.* iv. p. 90 (1835); *Booth, Rough Notes*, iii. pt. xi. 1 pl. (1886); *A. O. U. Check-l.* p. 77 (1886); *Gigl. Avif. Ital.* pp. 444, 561 (1886); *Salvad. Ucc. Ital.* p. 295 (1887); *Ridgw. Man. N. Am. B.* p. 11 (1887); *Tait, Ibis*, 1887, p. 399 [Portugal]; *Brusina, Soc. Hist.-Nat. Croatica*, iii. p. 140 (1888); *Lilford, Col. Fig. Brit. B.* pt. x. (1889); *Bishop, Auk*, vi. p. 145 (1889) [Magdalen Is.]; *Chamberlain, Auk*, vi. p. 213 (1889) [S. Greenland]; *Saunders, Ill. Man. Brit. B.* p. 691 (1889); *Gigl. Avif. Ital.* i. p. 658 (1889), ii. p. 651 (1890), iii. p. 511 (1891); *Warren, B. Pennsylvania*, p. 9 (1890); *Evans, Ibis*, 1891, p. 83 [incubation lasts 36 days]; *Waldo, Ibis*, 1893, p. 207 [Canary Is.]; *Irby, Orn. Gibraltar*, 2nd ed. p. 305 (1895); *Sharpe, Handb. B. Gt. Brit.* iv. p. 130, pl. cx. (1897).
- Mormon glacialis*, *Naumann, Isis*, 1821, p. 782, pl. vii. fig. 2; *Werner, Atl. Ois. d'Eur.* pl. 100 (1828); *Brehm, Handb. Vög. Deutschl.* p. 998 (1831); *Temm. Man. d'Orn.* ed. 2, pt. iv. p. 579 (1840); *Baird, B. N. Amer.* p. 903 (1858); *Fritsch, Nat. Vög. Europa's*, p. 493 (1870).
- Mormon arcticus*, *Naumann, Isis*, 1821, p. 783, pl. vii. figs. 5-7; *Nutt. Man. Orn.* p. 542 (1834); *Nilss. Skand. Faun.* ii. p. 516 (1835); *Aud. Orn. Biogr.* iii. p. 105, pl. ccxiii. (1835); *id. B. Amer.* vii. p. 238, pl. cccclxiv. (1844); *Macgill. Brit. B.* v. p. 365 (1852); *Schinz, Nat. Vög.* p. 222 (1853); *Baird, B. N. Amer.* p. 903 (1858); *Jaubert et Lapomm. Rich. Orn.* p. 409 (1859); *Fitz. Atl. Nat. Vög.* fig. 344 (1864); *Fritsch, Nat. Vög. Europa's*, p. 492 (1870), pl. 57. fig. 4 (1871); *Palmén, J. f. O.* 1876, p. 65 [Finland]; *Maynard, B. E. N. Amer.* p. 498 (1881); *Samuels, N. & E. Birds*, p. 566 (1883); *Sundev. Svensk. Fogl.* iii. p. 972, pl. lii. fig. i. (1885).
- Fratercula glacialis*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 40, pl. iv. fig. 2 (1826); *G. R. Gray, List of B.* pt. iii. p. 153 (1844); *id. Gen. B.* iii. p. 637 (1847); *Degl. Orn. Europ.* ii. p. 523 (1849) [part]; *Newton, Ibis*, 1865, p. 521, pl. vi. [Spitsbergen]; *Coues, P. Ac. Philad.* 1868, p. 23; *Elliot, B. N. Amer.* ii. pl. lxxv. (1869); *Gillett, Ibis*, 1870, p. 308 [Novaya Zemlya]; *Bureau, Bull. Soc. Z. Fr.* ii. p. 393, pl. v. figs. 1, 2 (1877) [shedding of ornaments of bill]; *Battye, Ibis*, 1897, p. 599 [Spitsbergen]; *Pearson, Ibis*, 1898, p. 207.
- Mormon polaris*, *Brehm, Isis*, 1826, p. 985 [Greenland]; *id. Handb. Vög. Deutschl.* p. 999 (1831).
- Coulterneb, Mont. Orn. Dict.* 2nd ed. p. 103 (1831).
- Mormon gravæ*, *Brehm, Handb. Vög. Deutschl.* p. 999, pl. xlvi. fig. i. (1831); *Olphe-Galliard, Ibis*, 1875, p. 267; *Vian, Bull. Soc. Z. Fr.* i. p. 4 (1876).
- Common Puffin*, *Selby, Ill. Brit. Orn.* ii. pl. lxxxiii. (1834).
- Lunda arctica*, *Keys. u. Blas. Wirbelth.* p. 236 (1840); *Naum. Nat. Vög. Deutschl.* xii. p. 577, pl. 335 (1844); *Schl. Mus. Pays-Bas*, vi. Urinat. p. 28 (1867); *Brandt, Mélang. Biol.* vii. p. 241 (1869).
- Uria troile*, *Wright, Ibis*, 1864, pp. 42, 157 [Malta].
- Alca glacialis*, *G. R. Gray, Hand-l. B.* iii. p. 96 (1871).
- Fratercula arctica*, var. *glacialis*, *Heugl. Ibis*, 1872, p. 64 [Novaya Zemlya]; *id. J. f. O.* 1872, p. 123.
- Fratercula arctica glacialis*, *Coues, Key N. Amer. B.* 2nd. ed. p. 803 (1884); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 527 (1884); *A. O. U. Check-l.* p. 77 (1886); *Ridgw. Man. N. Am. B.* p. 11 (1887).

*Adult in breeding-plumage.* General colour above, including a wide collar surrounding the fore-neck, black; top of the head greyish-black, inclining to dark grey on the forehead; chin, throat, sides of the head, and a narrow indistinct band across the nape pale grey, inclining to whitish on the cheeks; a dark grey band down each side of the throat; rest of underparts beneath the black collar pure white; some of the inner flank-feathers smoky-black on the inner web; quills brownish black; underside of wings pale grey, inclining to whitish on the lesser under wing-coverts. Tail black, composed of 16 feathers. Iris hazel; terminal half of both mandibles carmine, followed by a narrow band of pale yellow, basal half slate-grey, followed by a second band of pale yellow at the base of the upper mandible, and a narrow red one at the base of the lower; swollen skin at the angle of the gape orange; orbits carmine, horny skin above and below the eye bluish slate; legs and feet orange.

British and Norwegian examples measure:—Total length about 13 inches, culmen from feathers on forehead to tip 1·7–1·8, from gape to tip 1·4, greatest depth of both mandibles at base 1·35–1·5, wing 5·8–6·2, tail 1·7–1·8, tarsus 0·95–1, middle toe and claw 1·5–1·7.

The larger examples from Spitsbergen measure:—Culmen from feathers on forehead to tip 1·8–2 inches, from gape to tip 1·4, greatest depth of both mandibles at base 1·6–1·75, wing 6·7–7·2, tail 2·2, tarsus 1·2, middle toe and claw 1·85–1·9.

*Adult in non-breeding plumage.* Similar to the above, but with the feathers on the fore part of the face and round the eye black. The sheath covering the basal half of the upper and lower mandibles, as well as the warty skin round the gape, and the appendages above and below the eyes are cast towards the beginning of September.

*Immature.* Similar to the adult in non-breeding plumage, but easily distinguished by its much smaller bill, the terminal part of which is smooth and entirely devoid of transverse ridges.

*Young in down.* Dark smoky-brown, except a large white patch on the breast and middle of the belly.

*Obs.* Examples from Spitsbergen are conspicuously larger than those met with in Norway and the British Isles, and have been distinguished under the name of *F. glacialis*. These birds not only have the bill much larger and deeper, but the wing is decidedly longer, 6·7 to 7·2 inches. Birds from South Greenland, Iceland, and the Faroes are, however, intermediate in size; and the Spitsbergen birds can only be regarded as a larger Northern race.

*Hab.* Coasts and islands of the North Atlantic and Arctic Oceans, ranging eastward to Novaya Zemlya, westward to Greenland and North-eastern North America, south to the coast of Portugal, and in winter to the Canary Islands.

# 13. FRATERCULA.

|                                      | Wing.<br>in. |                                                              |                                  |
|--------------------------------------|--------------|--------------------------------------------------------------|----------------------------------|
| a. Vix ad. sk.                       | 6-0          | North America.                                               | Hudson's Bay Co.<br>[P.]         |
| b. Ad. sk.                           | 6-7          | Labrador ( <i>H. F. Müller</i> ).                            | F. Bond, Esq. [P.]               |
| c, d. ♂ ad. et<br>imm. sk.           | 6-6          | Mingan, Quebec, Canada,<br>July 20 ( <i>C. H. Merriam</i> ). | Salvin-Godman Coll.              |
| e. Ad. sk.                           | 6-2          | Bay of Fundy ( <i>G. A.<br/>Boardman</i> ).                  | Salvin-Godman Coll.              |
| f. ♂ ad. sk.                         | 6-8          | Sable Island, Nova Scotia,<br>Aug. 16.                       | Salvin-Godman Coll.              |
| g. Ad. sk.                           | 6-4          | Sable Island ( <i>J. R. Willis</i> ).                        | Salvin-Godman Coll.              |
| h. Ad. sk.                           | 6-6          | Greenland.                                                   | Hume Coll.                       |
| i. ♀ ad. sk.                         | 6-5          | Lichtenfels, S.W. Green-<br>land, Aug. 11.                   | Dr. R. Bowdler<br>Sharpe [P.]    |
| k. ♂ ad. sk.                         | 6-4          | Vestmanna I., S. Iceland.                                    | Hume Coll.                       |
| l. ♀ ad. sk.                         | 6-3          | Vestmanna I.                                                 | Hume Coll.                       |
| m. Ad. sk.                           | 6-4          | Faroe Islands.                                               | T. Frank, Esq. [P.]              |
| n-s. ♂ ♀ ad. et<br>pull. sk. [vars.] | 6-0-6-1      | Faroe Islands, July ( <i>H. C.<br/>Müller</i> ).             | Hargitt Coll.                    |
| t, u. Ad. sk.                        | 6-0-6-1      | Thorshavn, Faeroe Is., June.                                 | Col. H. W. Feilden<br>[P.]       |
| v. ♀ ad. sk.                         | 6-1          | Orkney Is., summer ( <i>E. H.</i> ).                         | Hargitt Coll.                    |
| w. ♀ juv. sk.                        | ..           | Orkney Is., Feb. 11 ( <i>J. H.<br/>Dunn</i> ).               | Hargitt Coll.                    |
| x, y. Pull. sk.                      | ..           | Orkney Is. ( <i>J. H. D.</i> ).                              | Hargitt Coll.                    |
| z. Pull. sk.                         | ..           | Orkney Is. ( <i>J. H. D.</i> ).                              | Baron A. von Hügel<br>[P.]       |
| aa', bb'. Pull. sk.                  | ..           | Hoy, Orkney Is.                                              | Purchased.                       |
| cc'. ♂ ad. sk.                       | 5-8          | St. Kilda.                                                   | Theodore Walker,<br>Esq. [P.]    |
| dd'. ♂ ad. sk.                       | 6-0          | St. Kilda, June 9.                                           | Hume Coll.                       |
| ee'. ♀ ad. sk.                       | 5-7          | Isle of Man, June 22.                                        | Purchased.                       |
| ff'. ♀ ad. sk.                       | 6-0          | Isle of Man, June 22.                                        | Purchased.                       |
| gg'. Ad. sk.                         | 5-9          | Pembrokeshire.                                               | Montagu Coll.                    |
| hh'-i'. ♂ ♀ ad.<br>sk.               | 5-9-6-2      | St. Bride's, S. Wales,<br>April 10.                          | Lord Kensington<br>[P.]          |
| jj'-o'. ♂ ♀ ad.<br>sk.               | 5-8-5-9      | St. Bride's, June 20.                                        | Lord Kensington<br>[P.]          |
| pp'. Juv. sk.                        | ..           | St. Bride's, Sept. 10.                                       | Lord Kensington<br>[P.]          |
| qq'. Pull. sk.                       | ..           | Lundy Island, June.                                          | H. Saunders, Esq.<br>[P.]        |
| rr'. Ad. sk.                         | 6-1          | Torbay, Devonshire, Feb.                                     | Baron A. von Hügel<br>[P.]       |
| ss'-tt'. Ad. sk.                     | 5-7-6-2      | Flamborough Head.                                            | Earl of London-<br>borough [P.]  |
| uu'. ♀ ad. sk.                       | 5-9          | Bamborough, Northumber-<br>land, April 26.                   | J. H. Gurney, Esq.<br>[P.]       |
| xx'-yy'. ♂ ♀ ad.<br>et imm. sk.      | 6-0-6-1      | Christiansund, N. Norway,<br>Aug. & Nov.                     | N. Hanson [C.]                   |
| zz'. Ad. et vix<br>ad. sk.           | 7-0          | Spitsbergen.                                                 | Lords of the Admir-<br>alty [P.] |
| aaa'. ♀ ad. sk.                      | 7-0          | Spitsbergen, July 5.                                         | Col. H. W. Feilden<br>[P.]       |



|                              | Wing.<br>in. |                                           |                                  |
|------------------------------|--------------|-------------------------------------------|----------------------------------|
| e". Ad. sk.                  | 6·7          | Cape Starashchin, Spits-<br>bergen, June. | A. Trevor - Battye,<br>Esq. [P.] |
| f". ♂ ad. sk.                | 7·0          | Advent Bay, Spitsbergen,<br>June 24.      | A. Trevor - Battye,<br>Esq. [P.] |
| g". ♀ ad. sk.                | 7·2          | Ice Fjord, Spitsbergen,<br>Aug. 11.       | A. Trevor - Battye,<br>Esq. [P.] |
| h". ♀ skeleton.              | ..           | St. Brides, S. Wales, June 20.            | Lord Kensington<br>[P.]          |
| i". ♂ trunk.                 | ..           | St. Brides, S. Wales, June 20.            | Lord Kensington<br>[P.]          |
| k", l". Sternum<br>& pelvis. | ..           | St. Brides, S. Wales, June 20.            | Lord Kensington<br>[P.]          |
| m". Skeleton.                | ..           | Christiansund, N. Norway.                 | N. Hanson [C.]                   |
| n". Skeleton.                | ..           | Spitsbergen, Aug.                         | Col. H. W. Feilden<br>[P.]       |
| o". Skull.                   |              |                                           | Seeböhm Coll.                    |

## 2. *Fratercula corniculata*.

- ♂ Puffin Auk, var. A, *Lath. Gen. Syn.* iii. pt. i. p. 317 (1785).  
*Alca arctica*, var. β, *Gmel. S. N.* i. pt. ii. p. 549 (1788); *Lath. Ind. Orn.* ii. p. 792 (1790).  
*Lunda arctica*, *Pallas (nec Linn.)*, *Zoogr. Rosso-As.* ii. p. 365, pl. lxxxiii. (1811).  
*Mormon corniculata*, *Naumann, Isis*, 1821, p. 782, pl. vii. figs. 3, 4; *Kittl. Kupfertaf. Nat. Vög.* i. p. 3, pl. i. fig. 1 (1832); *Middend. Sibir. Reise*, ii. pt. ii. p. 240 (1851); *Kittl. Denkw. Reise*, i. p. 301 (1858) [St. Matthew I.]; *Baird, B. N. Amer.* p. 302 (1858); *Cassin, P. Ac. Philad.* 1862, p. 324 [Bering Straits]; *Dall & Bann. Tr. Chicago Acad. v* p. 308 [1860, Alaska]; *Dall, Arif. Aleut.* p. 10 (1873); *id. P. Calif. Acad. v* pp. 34, 279 (1873, [Aleutian Is.]); *Tacz. Bull. Soc. Z. Fr.* ii. p. 52 (1877) [Sea of Okhotsk]; *Blakist. & Pryer, Tr. As. Soc. Jap.* viii. p. 179 (1880), x. p. 89 (1882); *Saunders, Ibis*, 1883, p. 348; *Seeböhm, Ibis*, 1884, p. 174 [Kurile Is.].  
*Mormon septentrionale*, *Kittl. Isis*, 1831, p. 1105.  
*Mormon glacialis*, *Aud (nec Steph.)*, *Orn. Biogr.* iii. p. 599, pl. ccxciii. (1835); *Gould, B. Eur.* v. pl. 404 (1837); *Schinz, Europ. Faun.* i. p. 362 (1840); *Aud. B. Amer.* vii. p. 236, pl. cccclxiii. (1844); *Hartung, P. Z. S.* 1871, p. 120 [Bering Straits].  
*Fratercula glacialis*, *Vigors, Zool. Voy. 'Blossom, Birds*, p. 33 (1839) [Alaska]; *Reichenb. Natatores*, pl. v. figs. 26-27, pl. vii. figs. 2228-9 (1850).  
*Fratercula corniculata*, *G. R. Gray, List of B.* pt. iii. p. 153 (1844); *id. Gen. B.* iii. p. 637, pl. clxxiv. (1847); *Reichenb. Natatores*, pl. v. fig. 28 (1850); *Kittl. Denkw. Reise*, ii. p. 224 (1858); *id. J. f. O.* 1858, p. 389; *Degl. & Gerbe, Orn. Europ.* ii. p. 609 (1867) [part]; *Coues, P. Ac. Philad.* 1868, p. 24; *id. Key N. Am. B.* p. 340 (1872); *Fusch, Abh. nat. Ver. Bremen*, iii. p. 82 (1872) [Alexandrovsk, E. Siberia; Kamschatka; Kurile Is.]; *Bureau, Bull. Soc. Z. Fr.* ii. p. 304, pl. v. fig. 3 (1877), iv. p. 28 pl. ii. (1879) [shedding of ornaments of bill]; *Barrows, P. Bost. Soc.* xix. p. 152 (1877); *Elliot, Seal Isl. Alaska*, p. 133 (1881); *Bean, P. U.S. Nat. Mus.* v. p. 171 (1882) [St. Matthew I.]; *Tacz.*

*Bull. Soc. Z. Fr.* vii. p. 368 (1882) [Bering I.]; *Dybowski, Orn. Centralbl.* 1882, p. 40; *id. Bull. Soc. Z. Fr.* vii. p. 297 (1882); *Nelson, Cruise 'Corwin,'* p. 115 (1883); *Dybowski & Tacz. Bull. Soc. Z. Fr.* ix. p. 147 (1884); *Coues, Key N. Amer. B.* 2nd ed. p. 801 (1884); *Baird, Brew. & Ridgw. Water-B. N. Amer.* ii. p. 529 (1884); *Turner, Auk,* ii. p. 159 (1885) [Nearer Is., Alaska]; *Stejn. Bull. U.S. Nat. Mus.* xxix. p. 59, pl. iii. (1885); *A. O. U. Check-l.* p. 77 (1886); *Palmén, Vega-Exped. Vetensk. Iakttag.* v. p. 400 (1887); *Ridgw. Man. N. Am. B.* p. 11 (1887); *Stejn. P. U.S. Nat. Mus.* x. p. 119 (1887) [Commander Is.]; *Nelson, Rep. N. H. Alaska,* p. 38, pl. ii. fig. 4 (1887); *Seebohm, B. Japan,* p. 280 (1890); *Tacz. Mém. Acad. St. Pétersb.* xxxix. p. 1248 (1893) [E. Siberia]; *Grinnell, Auk,* xv. p. 124 (1898) [Sitka]; *Seale, P. Ac. Philad.* 1898, p. 127.

*Lunda corniculata*, *Schl. Mus. Pays-Bas*, vi. *Urinat.* p. 28 (1867); *Brandt, Mélang. Biol.* vii. p. 242 (1869).

*Alca corniculata*, *G. R. Gray, Hand-l. B.* iii. p. 96 (1871).

*Adult in breeding-plumage.* Very similar to *F. arctica*, but easily distinguished by having the black collar across the fore-neck continued up to the chin; the sides of the head white, with a narrow grey stripe behind the eye, and the forehead and crown blackish grey, in contrast to the rest of the upper parts. The superciliary horn is also much larger, and the claws longer and more strongly curved. Tail composed of 16 feathers. "Iris brownish-grey; naked ring round the eye deep orange; superciliary horn black; tip of the bill to between the second and third grooves red, basal part pale chrome-yellow, swollen angle of the gape and inside of the mouth orange; legs and feet bright orange-red" (*G. E. H. Barrett-Hamilton*).

*Adult male.* Total length about 16 inches, culmen from feathers on forehead to tip 2, from gape to tip 1.5, greatest depth of both mandibles at base 1.8-1.85, wing 7.2-7.5, tail 2.6, tarsus 1.2-1.25, middle toe and claw 2.

*Adult female.* Total length about 16.6 inches, culmen from feathers on forehead to tip 1.9, from gape to tip 1.5, greatest depth of both mandibles at base 1.6-1.85, wing 6.9-7.2, tail 2.6-2.65, tarsus 1.1-1.15, middle toe and claw 1.75-1.9.

*Adult in non-breeding plumage.* Differs in having the sides of the head ash-grey, shading into sooty-black on the lores and orbital region. The basal shields on the sides of the bill as well as the superciliary horns are absent, and the swollen skin at the angle of the gape nearly obsolete. "Bill dark brownish, the terminal portion lighter and more or less tinged with orange-red; angle of the gape pale chrome-yellow; naked space round the eye dusky brown; feet pale reddish" (*L. Stejneger*).

*Immature.* Resembles the adult in non-breeding plumage, but is easily recognized by its much smaller bill.

*Young in down.* Like that of *F. arctica*, all the body being clad in dark smoky-brown down, except the middle of the breast and belly, which are white.

*Hab.* Coasts and islands of the North Pacific, from the sea of Ochotsk, Kurile Islands, and Kamschatka to the Commander Group, across Bering Sea to Alaska, and south to British Columbia.

|                                                |                                                                       |                                         |
|------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------|
| a. Ad. sk.                                     | Sea of Ochotsk ( <i>Middendorff</i> ).                                | Seebohm Coll.                           |
| b, c. Ad. sk. *                                | Shiashikotan, Kurile Islands, June ( <i>O. Snow</i> ).                | Seebohm Coll.                           |
| d, e ♀ ad. et vix ad. sk.                      | Bering I., Commander Group, July.                                     | G. E. H. Barrett-Hamilton, Esq. [P.].   |
| f. ♀ ad. sk.                                   | Copper I., Commander Group, Aug. 12.                                  | G. E. H. Barrett-Hamilton, Esq. [P.].   |
| g-i. ♀ ad. sk.                                 | St. Paul Island, Pribilof Group, June, July ( <i>H. W. Elliott</i> ). | Salvin-Godman Coll.                     |
| k. ♂ ad. sk.                                   | W. coast of Alaska, May 9 ( <i>J. W. Johnson</i> ).                   | Salvin-Godman Coll.                     |
| l-n. Ad. sk.                                   | Cape Lisburne.                                                        | Capt. Kellett & Lieut. Wood, R.N. [P.]. |
| o. Ad. sk.                                     | Kotzebue Sound, Sept.                                                 | Capt. Kellett & Lieut. Wood, R.N. [P.]. |
| p. Ad. sk.                                     | Norton Sound.                                                         | Capt. Kellett & Lieut. Wood, R.N. [P.]. |
| q-h'. ♂ ad. st. et ♂ ♀ ad., imm., et pull. sk. | St. Michael's, June to Sept. ( <i>E. W. Nelson</i> ).                 | Salvin-Godman Coll.                     |
| o'-f'. Ad. heads.                              | St. Michael's, Sept. ( <i>E. W. N.</i> ).                             | Salvin-Godman Coll.                     |
| g'-i'. Juv. et pull. sk.                       | Stewart I., Aug., Sept. ( <i>E. W. N.</i> ).                          | Salvin-Godman Coll.                     |
| l' p'. ♀ ad. et pull. sk.                      | Kodiak I., July, Aug ( <i>H. W. Henshaw</i> ).                        | Salvin-Godman Coll.                     |

\* Cf Seebohm, B Japan, p. 281 (1890).

## Order XX. IMPENNES.\*

(By W. R. OGILVIE-GRANT.)

Beak never hooked; nares pervious, holorhinal; no basipterygoid processes; palate schizognathous; vomer blade-shaped, paired, the two halves united along the antero-ventral border; palatines broad and flattened posteriorly; pterygoids expanded into flattened lamina distally, never rod-like; interorbital septum perforate; with deep supraorbital grooves; lachrymals free, never contributing to form the supraorbital grooves, and without conspicuous lateral wings when the skull is viewed dorsally, its lower limb pedate, articulating with the quadrato-jugal bar; maxillo-palatine processes in the form of slender curved rods, never laminate.

Sternum half as broad as it is long, with a pair of notches posteriorly, a spina externa, and with the keel projecting forward beyond the *corpus sterni*; pre-coracoid and acro-coracoid large; scapula of great breadth and truncate posteriorly.

All the bones of the pectoral limb much flattened dorso-ventrally; humerus with a large non-pneumatic fossa at its proximal end; obliquely truncate distally and grooved for large, ossified sesamoids; ulnare of great size, and more or less triangular in outline; first and second metacarpals indistinguishably fused with one another and the former without phalanges.

Pelvic limb with the tarso-metatarsus nearly as broad as long. Metatarsals more or less completely separated one from the other by grooves; no ecto-trochlear foramen; II. trochlea shorter than the III. and not directed backwards. (*W. P. Pycraft.*)

\* The following papers refer to the anatomy etc. of the group:—Reid, P. Z. S. 1835, p. 132 [anatomy of *A. patagonica*]; Brandt, Mém. Acad. St. Petersb. (6) v. pt. ii. pp. 164, 213–217, pls. xii., xiii. (1839) [osteology]; Huxley, P. Z. S. 1867, p. 458; Coues, Pr. Bost. Soc. xiv. pp. 251–253 (1872); Hyatt, Pr. Bost. Soc. xiv. pp. 238–241 (1872); Garrod, P. Z. S. 1873, p. 470 [carotids present], p. 642 [muscles], 1875, p. 348 [plantar tendons]; Gervais & Alix, Journ. Zool. vi. pp. 424–472, pls. xvi., xvii. (1877) [osteology and myology]; Jullien, Bull. Soc. Z. Fr. iv. pp. 374–382, pls. viii., ix. (1879) [anatomy of *A. patagonica*]; M.-Edwards, Ann. Sci. Nat. (6) ix. Art. 9, pp. 1–82, pls. 17–20, and map of distribution (1880); Filhol, Bull. Soc. Philom. (7) vi. p. 226 (1882) [osteology], vii. p. 9293 (1883) [circulatory system, muscles]; Nathusius, J. f. O. 1882, p. 293 [egg-shell of *Spheniscus*]; Watson, Voy. Chall. vii. pp. 1–243, pls. i.–xix. (1883); Beddard, P. Z. S. 1885, p. 843 [visceral anatomy]; Solater, Ibis, 1887, p. 367; Menzbier, Bull. Mosc. 1887, pp. 483–587, pl. viii. [osteology]; Beddard, P. Z. S. 1888, pp. 252–258 [visceral anatomy]; Gadow, P. Z. S. 1888, p. 665 [development of remiges]; Berkeley, MT. orn. Ver. Wien, 1891, pp. 22, 23, 45, 46, 87, 88, 118, 119; Mitchell, P. Z. S. 1896, p. 142 [intestinal tract].

*Key to the Genera.\**

- I. Both mandibles long, relatively slender, and curved downward towards the tip; tail relatively rather short, composed of 20 feathers, scarcely surpassing the upper tail-coverts in length: size very large. . . . . [p. 626.  
1. **APTENODYTES,**
- II. Bill moderately long, the lower mandible never curved downward towards the tip: size moderate or relatively small.
- A. Tail relatively long, composed of 12, 14, or 16 feathers; upper tail-coverts short.
- a. Bill moderately long or short, never very stout, the culmicorn being divided by a groove from the latericorn, which is never swollen; feathering at the angle of the gape closely approaching or entirely concealing the basal third of the tomia. No superciliary band of golden feathers . . . . . 2. **PYGOSCELIS,** p. 630.
- b. Bill moderately long and very stout, the culmicorn being divided by a deep groove from the latericorn, which is much swollen towards the base; feathering at the angle of the gape leaving the tomia and the greater part of the base of the upper and lower mandibles exposed. A superciliary band of more or less elongate golden feathers . . . . . [p. 635.  
3. **CATAERHACTES,**

*\* Doubtful Species.*

1. Le Manchot à Collier de la Nouvelle Guinée, *Sonnerat, Voy. N. Guin.* p. 180, pl. 114 (1776).  
*Aptenodytes torquata*, *Forster, Comment. Gottingensis*, iii. p. 146 (1781); *Gmel. S. N.*, pt. ii. p. 558 (1788); *Latham, Ind. Orn.* ii. p. 880 (1790); *Bonnat, Tabl. Encycl. Meth.* i. p. 69, pl. 18. fig. 3 (1790); *Reichenb. Natatores*, pl. 1a fig. 13 (1850).  
Collared Pinguin, *Latham, Gen. Syn.* iii. pt. ii. p. 571 (1785); *id. Gen. Hist.* i. p. 391 (1824).  
*Aptenodytes platyrhynchos*, *Scop. Del. Flor. et Faun. Insubr.* pt. ii. p. 91 (1786).  
Three-toed Pinguin, *Latham, Gen. Hist.* i. p. 393 (1824).  
*Chrysocoon a torquata*, *Steph. in Shaw's Gen. Zool.* xii. p. 60 (1826).

Head, throat, back and sides of neck, and upper parts black, fore-neck and rest of underparts white, the white of the fore-neck forming a half-collar, below the black throat and extending across the sides of the neck; naked space surrounding the eye blood red, beak, feet, and iris black.

Sonnerat does not give anything but a short description of this species, and it is uncertain whether his description was taken from a specimen actually obtained, or merely from birds observed during his travels. Forster noticed Penguins answering perfectly to the above description in the neighbourhood of Kerguelen and South Georgia, but did not obtain specimens, and his description was based on observations made from the ship. The naked red space

- B. Tail relatively short, composed of 20 feathers; upper tail-coverts short. Bill moderately long, not very stout, the culminicorn being divided by a groove from the latericorn, which is not much swollen towards the base; feathering at the angle of the gape leaving the tomia and greater part of the base of the mandibles exposed. Superciliary bands of short golden feathers, united at the back of the crown ..... [p. 644.
- C. Tail very short, composed of 16, 18, or 20 feathers, which are almost entirely concealed by the longer upper tail-coverts; groove dividing the culminicorn from the latericorn inconspicuous.
- c. Basal part of mandibles entire: size small ..... 4. MEGADYPTES,
- d. Basal part of mandibles furrowed by numerous longitudinal ridges ..... 5. EUDYPTULA, p. 645. [p. 648.
6. SPHENISCUS,

surrounding the eye was specially noted. So far as is known no species of Penguin has a conspicuous naked space round the eye; and if the descriptions of these two writers are merely based on birds observed from a distance, it seems not improbable that they may have mistaken some species of Cormorant.

The bill and head of the bird figured by Sonnerat are certainly more like those of some species of Cormorant.

Coues considers *A. torquata*, Forst., to be "a variety of *demersus*," but this view seems obviously untenable.

2. *Diomedea chilensis*, *Molina, Hist. Nat. Chili*, p. 210 (1786), ed. Gall. p. 217 (1789).

*Aptenodytes chilensis* & *A. chilensis*, *Gmel. S. N. i. pt. ii. p. 559* (1788) [based on Molina's descriptions].

*Pinguinus chilensis*, *Bonnat. Tabl. Encycl. Méth. i. p. 30* (1790).

*Aptenodytes molinæ*, *Latham, Ind. Orn. ii. p. 881* (1790).

These are also said by Coues to be descriptions of the young of *S. demersus*. It is just possible that Molina may have had before him the young of *S. humboldti*, but even this is very doubtful.

3. New-Holland Penguin, *Latham, Gen. Hist. x. p. 388* (1824).

*Spheniscus novæ-hollandiæ*, *Steph. in Shaw's Gen. Zool. xiii. pt. i. p. 68* (1825).

This may be founded on an immature specimen of *C. pachyrhynchus* or *M. antipodum*, but the meagre description makes it impossible to identify the species referred to with certainty.

4. *EUDYPTES* sp.?—"Intermediate in size between the Emperor and Black-throated Penguins, having a yellow patch under each eye and a red supraciliary crest extending backwards on each side to a length of 3 to 4 inches." A rookery of this Penguin was met with on the South Orkneys by Capt. Larsen, and two specimens were preserved but afterwards lost. Believed to be an undescribed species.—*Cf. Donald, P. R. Soc. Edinb. xii. p. 176* (1894).

## 1. APTENODYTES.

Type.

- Aptenodytes*, *Forster, Comment. Gottingensis*, iii. p. 133 (1781); *Hyatt, Pr. Bost. Soc.* xiv. p. 241 (1872) ..... *A. patagonica*.  
*Apterodita*, *Scop. Del. Flor. et Faun. Insubr.* ii. p. 91 (1786) ..... *A. patagonica*.  
*Pinguinaria*, *Shaw, Mus. Lever.* p. 144 (1792) ..... *A. patagonica*.

Both mandibles long, relatively slender, and curved downward towards the tip; culminicorn divided by a deep groove from the latericorn. Tail relatively rather short, composed of 20 feathers, which scarcely surpass the longer upper tail-coverts in length. Size very large.

*Range.* From the Straits of Magellan to the Macquarie Islands and New Zealand, and southwards to the shores of the Antarctic continent.

*Key to the Species.*

- I. Basal half of the lower mandible partially concealed by feathers; black of the throat meeting the white of the fore-neck in a concave semicircle; yellow semicircular patch on each side of the head shading into white on the side of the neck which is partially divided by a black shoulder-patch ..... *forsteri*, p. 626.  
 II. Basal half of the lower mandible bare; black of the throat ending in a point on the fore-neck and margined on either side by orange-yellow bands which connect the orange-yellow patches on each side of the head with that on the lower fore-neck ..... *patagonica*, p. 627.

1. *Aptenodytes forsteri*.

- Aptenodytes forsteri*, *G. R. Gray, Ann. Mag. N. H.* xiii. p. 315 (1844); *id. List B.* pt. iii. p. 156 (1844) [lat. 64° to 77° S., *id. Gen. B.* iii. p. 642, pl. 176 fig. 2 (1846), *Owen, P. Z. S.* 1865, p. 438 [anatomy]; *G. R. Gray, Hand-l. B.* i. i. p. 99 (1871); *id. Voy. Erebus & Terror, Birds*, pl. 31 (1875); *Sclater, Ibis*, 1888, p. 325, figs. 2 & 4 [part, synonymy] [lat. 65° 48' S., long. 157° 36' W.]; *Donald, P. R. Soc. Edinb.* xx. pp. 172, 174 (1894) [Erebus & Terror Gulf, lat. 64° 20' S.], *id. P. R. Phys. Soc. Edinb.* xii. p. 329 (1894); *Sclater, Ibis*, 1894, p. 400.  
*Aptenodytes imperator*, *Bonap. C. R.* xlii. p. 775 (1856).  
*Spheniscus patagonicus*, *Schleg. Mus. Pays-Bas*, vi. Urinat p. 3 (1867).  
*Aptenodytes patagonica*, *Coues (nec Forst.), P. Ac. Philad.* 1872, p. 192; *Hyatt, P. Bost. Soc.* xvii. p. 94 (1875).  
*Aptenodytes patagonica*, *Sharpe (nec Forst.), Voy. Erebus & Terror, App.* p. 38 (1875).

*Adult.* General colour of the upper parts bluish grey, each feather with a dark base and a bluish-white subterminal spot; top of the head, cheeks, chin, and throat deep black; a large semicircular

orange-yellow patch on each side of the head, shading gradually into white on the neck; a wide blackish band bordering the shoulder, and ending in an obtuse point partially divides the white sides of the neck; fore-neck and rest of underparts white; upper surface of flippers like the back, under surface pure white. Tail composed of 20 feathers, which scarcely exceed the longer upper tail-coverts in length. Inter-ramal space entirely feathered; greater part of the basal half of the lower mandible feathered, leaving only the expanded and coloured edge naked at the gape. Tarsi covered with feathers which conceal the base of the outer toe. Total length about 48 inches; culmen from gape 4.5, from feathering on nasal opening to tip 2; flipper, from shoulder to tip 12.6–12.9; tail 3.6.

McCormick records the weight of one of the adult specimens obtained by him as 64½ lb. Donald records two birds weighing respectively 74 lb. and 60 lb.; the vertical height of the latter was 45 inches, the greatest circumference 37½ inches, and the length from tip to tip of the flippers 36½ inches. Ross gives the weight as 60–78 lb.

*Immature.* Differs from the adult in its smaller size and in having the semi-circular patches on the sides of the head whitish, with only the slightest trace of yellow; chin and throat white, heavily mottled with black.

*In a still younger bird* the semi-circular patches on the sides of the head are absent, these parts being greyish black like the rest of the head; throat white mixed with black.

*Hab.* Shores of the Antarctic continent.

|                                |                                                            |                    |
|--------------------------------|------------------------------------------------------------|--------------------|
| a-c. Ad. et imm. st.           | Antarctic Seas.                                            | Antarctic Exped.   |
| d. Ad. sk.                     | Antarctic Seas.                                            | Antarctic Exped.   |
| e. Imm. st.                    | Antarctic Seas, lat. 64° S.                                | Antarctic Exped.   |
| f, g. Ad. sk.                  | Pack Ice, Antarctic Seas,<br>Dec. ( <i>R. McCormick</i> ). | McCormick Bequest. |
| h. Ad. skel., mounted.         | Antarctic Seas.                                            | Antarctic Exped.   |
| i-l. Ad. et imm.<br>skeletons. | Antarctic Seas.                                            | Antarctic Exped.   |

## 2. *Aptenodytes patagonica*.\*

Patagonian Penguin, *Pennant*, *Phil. Trans.* lviii. p. 91, pl. v. (1768);  
*id. Genera Birds*, p. 55, pl. xiv. (1781); *Latham*, *Gen. Syn.* vi.  
p. 593 (1785); *id. Gen. Hist. B.* x. p. 390 (1824).

Le Manchot des Isles Malouines, *D'Aubent. Pl. Enl.* x. pl. 56  
[no. 975].

Le Manchot de la Nouvelle Guinée, *Sonnerat, Voy. N. Guin.* p. 179,  
pl. 113 (1776).

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\* In spite of what G. R. Gray has written to the contrary [*Ann. Mag. N. H.* xiii. p. 315 (1844)], there cannot be the slightest doubt that the *Aptenodytes patagonica* figured in Miller's 'Cimelia Physica,' pl. xxiii. (1796), is the same species as the bird figured by Pennant, *Phil. Trans.* lviii. pl. v. (1768).

Miller's figure is of course wrongly coloured, the upper parts being painted black, but it is certain that the bird he figures is meant for a "King," not an "Emperor" Penguin. As evidence of this we find the naked base of the



- Aptenodytes patachonica*, Forster, *Comment. Göttingensis*, iii. p. 137, pl. ii. (1781) [Magellan; Falkland Is.; S. Georgia]; *id.* *Icon. ined.* pl. 81; *Gmel. S. N.* i. pt. ii. p. 556 (1788); *Lath. Ind. Orn.* ii. p. 878 (1790); *Bennett, P. Z. S.* 1834, p. 34 [habits on Macquarie I.]; *Reid, P. Z. S.* 1835, p. 132 [anatomy; East Falkland I.]; *Cassin, U. S. Expl. Exped.* p. 349 (1858) [lat. 66° 52' S., long. 150° 25' E.]; *Fitz. Atl. Nat. Vog.* fig. 347 (1864).
- Le Grand Manchot, *Buff. Hist. Nat. Ois.* ix. p. 399, pl. xxx. (1783).
- Apterodita longirostris*, Scop. *Del. Flor. et Faun. Insebr.* ii. p. 91 (1786).
- Aptenodyta patagonica*, *Bonnat. Tabl. Encycl. Méth.* i. p. 66, pl. 13, fig. 3 (1790).
- Pinguinaria patachonica*, Shaw, *Mus. Lever.* p. 144, pl. (1792).
- Pinguinaria patagonica*, Shaw in *Müller, Cymelia Physica*, p. 45 (1796).
- Aptenodytes patagonica*, *Müller, Cymelia Physica*, pl. xxiii. (1796); *Weddell, Forriep's Notizen*, xii. p. 198 (1825); *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 55, pl. 7 (1825); *Licht. ed. Forst. Descrip. Anim.* p. 347 (1844); *Reichenb. Natatores*, pl. i. figs. 3 & 4 (1850); *Layard, Ibis*, 1867, p. 459.
- Patagonian Penguin, Shaw & Nodder, *Nat. Mus.* xi. pl. 409 (1799).
- Hairy Penguin, *Latham, Gen. Hist.* x. p. 392 (1824); *Farrell, P. Z. S.* 1833, p. 33.
- Woolly Penguin, *Latham, Gen. Hist.* x. p. 392, pl. 181 (1824); *Farrell, P. Z. S.* 1833, pp. 33, 66.
- King Penguin, *Weddell, Voy. South Pole*, p. 55 (1825) [habits on I. of S. Georgia].
- Aptenodytes pennantii*, *G. R. Gray, Ann. Mag. N. H.* xiii. p. 315 (1844); *id. List B.* pt. iii. p. 156 (1844) [Falkland Is.; Kerguelen Land]; *id. Gen. B.* iii. p. 642 (1846); *Reichenb. Natatores*, pl. i. figs. 1 & 2 (1850); *Gould, P. Z. S.* 1850, p. 98 [Falkland Is.]; *Slater, P. Z. S.* 1860, p. 390 [Falkland Is.]; *Abbott, Ibis*, 1861, p. 163 [Falkland Is.]; *Slater, Ibis*, 1862, p. 242 [Stewart I.]; *id. P. Z. S.* 1865, p. 318, 1868, p. 527 [E. Falkland]; *Slater & Salvin, Ibis*, 1869, p. 284 [Tyssen Is., Falkland Sound]; *G. R. Gray, Hand-l. B.* iii. p. 99 (1871); *Finsch, J. f. O.* 1872, p. 274; *Hyatt, P. Bust. doc.* xiv. p. 247 (1872) [Straits of Magellan]; *G. R. Gray, Voy. Erebus & Terror, Birds*, pl. 32 (1875); *Slater, P. Z. S.* 1879, p. 763 [Staten I., Tierra del Fuego]; *id. Ibis*, 1888, pp. 331, 332, figs. 1 & 3; *Hamilton, Tr. N. Zeal. Inst.* xxvii. p. 559 (1895) [Macquarie I.].
- Aptenodytes rex*, *Bonap. C. R.* xln. p. 775 (1856).
- Aptenodytes forsteri*, *Slater (nec G. R. Gray), Ibis*, 1860, p. 432 [Falkland Is.]; *id. Ibis*, 1888, p. 325 [part].
- Spheniscus pennantii*, *Schlegel, Mus. Pays-Bas*, vi. *Urinat.* p. 3 (1867) [Falkland Is.].
- Aptenodytes longirostris*, *Cones, P. Ac. Philad.* 1872, p. 193 [Falkland Is.; Kerguelen, Stewart I.]; *Sharpe, Voy. Erebus & Terror*

mandible, the narrow orange-yellow line passing down the side of the throat and joining the orange-yellow chest, and the terminal black patch on the under surface of the flipper.

The fact is that the "Emperor" Penguin was probably unknown, certainly not described or figured, till Gray characterized it in 1844, and all the descriptions of the "Patagonian Penguin," *Aptenodytes patagonica* etc. of the earlier writers refer to the "King Penguin" only. Under these circumstances the name *A. patagonica* must stand.

App. p. 37 (1875): *Kidder & Coues, Bull. U.S. Nat. Mus. no. 2, p. 39* (1875) [habits on Kerguelen]; *Sclater & Salvin, P. Z. S.* 1878, p. 653; *Sclater, P. Z. S.* 1879, p. 311 [eggs from Marion and Herd Is.]; *Sharpe, Phil. Trans.* clxviii. p. 152 (1879) [Kerguelen]; *Sclater & Salvin, Voy. Chall., Zool. Birds*, p. 122 (1880) [Kerguelen; Marion I.; Falkland Is.]; *Buller, B. N. Zeal.* 2nd ed. ii. p. 306 (1888) [Stewart I.]; *Studer, Forschungsreise S.M.S. Gazelle*, iii. p. 104 (1889); *Steinen, Internat. Polarforsch. Deutschen Exped.* ii. pp. 229-237, 273-276, pls. 7-8 (1890) [South Georgia]; *Moseley, Notes Voy. Chall.* p. 152, fig. (1892); *Hazard, Auk*, xi. p. 280, pl. viii. (1894) [breeding habits].

**Adult.** General colour of the upper parts bluish grey as in *A. forsteri*, but shading into pearl-grey on the back of the neck, shoulders, and upper tail-coverts; top of the head, cheeks, throat, and upper part of fore-neck deep black with a distinct greenish-yellow gloss; the black on the fore-neck terminating posteriorly in a point; a large oval patch of orange-yellow on each side of the head, continued in a narrow band down each side of the throat and dividing the pearly-grey of the back and sides of the neck from the black of the fore-neck; these orange-yellow bands uniting with one another at the base of the fore-neck gradually widen into a deep orange patch which shades into yellow and disappears on the white breast and underparts; the pearly-grey sides of the neck closely approach one another on the fore part of the neck, and are edged by a narrow black band which passes down the shoulder, increasing in width as it approaches the base of the flipper; upper surface of flippers grey like the upper parts, under surface white with a large terminal black patch. As in *A. forsteri*, the inter-ramal space is entirely feathered, but the basal half of the lower mandible is bare. The feathering on the tarsi does not extend so low down as in the previous species, never covering the base of the outer toe. "Iris bright brown; tarsus and foot black; claws black; upper mandible black, lower mandible black anteriorly, flesh-coloured over the posterior half" (*Kidder*).

In two examples the yellow patches on the sides of the head closely approach one another or are confluent on the nape: one of these birds was obtained on the Falkland Islands, the other on the Snares. Probably these specimens are very old birds.

Total length about 36 inches, culmen from gape to tip 4.7, from nasal feathers to tip 2.4, flipper from shoulder to tip 12, tail 3.2.

*An immature bird* differs from the adult in having the orange markings on the sides of the head and throat, and the fore-neck white merely tinged with yellow.

*Young attaining first plumage.* Head and neck clothed with smoky-brown down; plumage of the back and flippers dark bluish grey, intermixed with long down, especially on the shoulders and lower back and, in patches, on the flippers; chest yellowish, with very long, hair-like, smoky-brown down; rest of the underparts white as in the adult. Total length about 32 inches, culmen from nasal opening to tip 2.3, from gape to tip 4.1, flipper 12. (*Mus. Rothschild.*)

*Young in down.* Entirely clothed in long hairy down of a smoky-brown tint, rather paler on the forehead, back of the neck, and flipper. Total length about 15.5 inches.

*Hab.* Straits of Magellan, Falkland Is., South Georgia, Marion I., Kerguelen Land, Macquarie Is., Snares Is., and Stewart I.

|                           |                                                    |                            |
|---------------------------|----------------------------------------------------|----------------------------|
| a. Ad. st.                | Falkland Islands.                                  | H. Walker, Esq. [P.].      |
| b. Pull. st.              | Falkland Islands.                                  | Hardwicke Bequest.         |
| c. Ad. sk.                | Falkland Islands.                                  | Hardwicke Bequest.         |
| d. Ad. sk.                | Falkland Islands.                                  | Old Coll.                  |
| e, f. ♂ & ♀ ad. sk.       | Falkland Islands.                                  | 'Challenger' Exped.        |
| g, h. Ad. et<br>imm. sk.  | Falkland Islands ( <i>Leconte</i> ).               | Salvin-Godman Coll.        |
| i. Ad. st.                | Kerguelen Land.                                    | Antarctic Exped.           |
| k. ♂ ad. sk.              | Christmas Harbour, Kerguelen.                      | 'Challenger' Exped.        |
| l. Ad. sk.                | Swain's Bay, Kerguelen ( <i>A. E.<br/>Eaton</i> ). | Transit of Venus<br>Exped. |
| m. Ad. sk.                | Marion Island.                                     | 'Challenger' Exped.        |
| n. Ad. sk.                | Macquarie Island.                                  | H. Travers, Esq. [C.].     |
| o. Ad. sk.                | Stewart Island, New Zealand,<br>Dec.               | Baron A. von Hugel<br>[P.] |
| p. Ad. skel.,<br>mounted. | Falkland Islands.                                  | 'Challenger' Exped.        |
| q-s. Ad. skeletons.       | Falkland Islands.                                  | Antarctic Exped.           |
| t. Skull.                 |                                                    |                            |
| u, v. Ad. in spirits.     |                                                    | 'Challenger' Exped.        |

## 2. PYGOSCELIS.

|                                                                                                                            | Type.      |
|----------------------------------------------------------------------------------------------------------------------------|------------|
| <i>Pygoscelis</i> , <i>Wagler, Isis</i> , 1832, p. 281; <i>Hyatt, Pr. Bost.</i><br><i>Sec. xiv</i> p. 242 (1872) . . . . . | P. papua.  |
| <i>Dasyrhamphus</i> , <i>Humboldt &amp; Jacquinot, Voy. Pêl. Sud</i> ,<br><i>Zool. in.</i> p. 154 (1853). . . . .          | P. adeliae |
| <i>Pygoscelis</i> , <i>Bonap. C. R.</i> xlin. p. 775 (1856) . . . . .                                                      | P. papua.  |

Bill moderately long or short, never very stout, the culminicorn divided by a groove from the latericorn, which is never swollen. Feathering at the angle of the gape closely approaching or entirely concealing the basal third of the tomia. Tail relatively very long, composed of 12, 14, or 16 feathers; upper tail-coverts short. No superciliary band of golden feathers. Size moderate.

*Range.* Straits of Magellan to the Macquarie Islands and southwards to the Antarctic continent.

### Key to the Species.

- I. Chin and throat greyish- or brownish-black.
  - A. A wide white band commencing above the eye, curving backwards across the crown; flipper margined with white on both edges . . . . . *papua*, p. 631.
  - B. No band across the crown; inner margin only of flipper bordered with white . . . . . *adeliae*, p. 632.
- II. Chin and throat white; a narrow black line crossing the throat in a semi-circle from ear to ear. . . . . *antarctica*, p. 634.

1. *Pygoscelis papua*.

- Le Manchot Papou*, *Sonnerat, Voy. N. Guin.* p. 181, pl. 115 (1776).  
*Aptenodytes papua*, *Forster, Comment. Gottingensis*, iii. p. 140, pl. iii. (1781) [Falkland Is.]; *Gmel. S. N.* i. pt. ii. p. 556 (1788); *Latham, Ind. Orn.* ii. p. 879 (1790); ? *Vieillot, Gal. Ois.* ii. p. 246, pl. 299 (1825); *Licht. ed. Forst. Descript. Anim.* p. 352 (1844).  
*Papuan Pinguin*, *Latham, Gen. Syn.* iii. pt. ii. p. 565 (1785); *id. Gen. Hist.* x. p. 388 (1824).  
*Apterodita papuæ*, *Scop. Del. Flor. et Faun. Insubr.* ii. p. 91 (1786).  
*Aptenodyta papua*, *Bonnat. Tabl. Encycl. Méth.* i. p. 67, pl. 17. fig. 3 (1790).  
*Chrysocoma papua*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 59 (1825).  
*Pygoscelis papua*, *G. R. Gray, List B.* pt. iii. p. 153 (1844); [Falkland Is.; Kerguelen]; *Reichenb. Natatores*, pl. ii. fig. 738 (1850); *Hyatt, P. Bost. Soc.* xiv. p. 249 (1872); *G. R. Gray, Voy. Erebus & Terror, Birds*, pl. 25 (1875); *Steinen, Internat. Polarforsch. Deutschen Exped.* ii. pp. 221-229, pls. 9, 10 (1890) [S. Georgia]; *Donald, P. R. Soc. Edinb.* xx. p. 175 (1894) [lat. 63° 37' S., long. 55° 30' W., east of Paulet I., & lat. 63° 18' S., long. 56° 35' W., Dundee I., breeding, 6th Jan.].  
*Eudyptes papua*, *G. R. Gray, Gen. B.* iii. p. 641 (1846); *Reichenb. Natatores*, pl. cclxiv. fig. 2220 (1850); *Cassin, U.S. Expl. Exped.* p. 350 (1858) [Macquarie I.]; *Hould, P. Z. S.* 1859, p. 98 [egg from Falkland Is. described]; *Abbott, Ibis*, 1860, p. 336 [Falkland Is., habits]; *G. R. Gray, Hand-l. B.* iii. p. 98 (1871).  
*Aptenodytes tæniata*, *Peale, Zool. U.S. Expl. Exped., Birds*, p. 264 (1848).  
*Pygosceles wagleri*, *Sclater, P. Z. S.* 1860, p. 390 [Falkland Is.]; *Abbott, Ibis*, 1861, p. 163 [Falkland Is.]; *Sclater, Ibis*, 1862, p. 243 [Macquarie Is.]; *id. P. Z. S.* 1868, p. 527.  
*Spheniscus papua*, *Schleg. Mus. Pays-Bas*, vi. *Urinat.* p. 5 (1867) [Falkland Is.].  
*Pygoscelis papuensis*, *Van der Hoeven, fide G. R. Gray, Hand-l. B.* iii. p. 98 (1871).  
*Pygoscelis tæniatus*, *Coues, P. Ac. Philad.* 1872, p. 195 [Falkland, Kerguelen, & Macquarie Is.]; *Kidder & Coues, Bull. U.S. Nat. Mus.* no. 2, p. 41 (1875) [habits on Kerguelen]; *Sharpe, Phil. Trans.* clxviii. p. 154 (1879); *Buller, B. N. Zeal.* 2nd ed. ii. p. 304 (1888) [Macquarie I.]; *Studer, Forschungsreise S.M.S. Gazelle*, iii. p. 105 (1889); *Moseley, Notes Voy. Chall.* p. 151 (1892); *Sclater, Ibis*, 1894, p. 500; *Donald, P. R. Phys. Soc. Edinb.* xii. p. 334 (1894).  
*Pygosceles tæniatus*, *Sclater & Salvin, P. Z. S.* 1878, p. 653; *Sclater, P. Z. S.* 1879, p. 311 [eggs from Falkland Is.]; *Sclater & Salvin, Voy. Chall., Zool. Birds*, p. 124 (1880) [Kerguelen; Marion I.; Heard I.].

*Adult.* General colour of the upper parts slate-grey, each feather with a dark base and a bluish-grey tip; head and neck brownish black; a wide white band across the crown between the eyes. In most examples there are a number of scattered white plumes about the head and neck. Chest and rest of underparts pure white. Flipper greyish brown above, edged on both sides with white; below white, with a black patch at the extremity. Tail in adults composed of 16 feathers, in young birds of 18 feathers, the small white

outermost pair disappearing in the adults. Total length about 30 inches, culmen from nasal feathers to tip 1·8, from gape to tip 3·65, flipper from shoulder to tip 9, tail 6, middle toe and claw 3·3·4.

*Adult in worn plumage.* Upper parts brownish, thickly mottled with black, the blue-grey ends to the feathers having become abraded.

"Iris rich brown, pupil lozenge-shaped when contracted; lower mandible and lower margin of upper mandible brilliant orange, upper portion and tip of upper mandible black; tarsus and feet orange-coloured, claws black" (*Kidder*).

*Immature.* Differs only from the adult in having a much smaller bill, and the chin and throat white, mottled with greyish black.

*Young in down.* Body entirely clothed in down. Top of the head, upper parts, patch on the shoulder, and upper surface of the flipper deep ashy, the latter widely edged on both margins with white; chin, throat, sides of the head and neck, and rest of the underparts white, this colour extending farther up the sides than in the adult and forming a wide white band between the dark ashy flipper and the back. Only the upper tail-coverts and tail-feathers are making their appearance. Total length about 24 inches; bill from nasal feathers to tip 1·3, from gape to tip 2·7; flipper 9. (*Mus. Rothschild.*)

*Hab.* The Gentoo Penguin inhabits the Falklands, South Georgia, Marion I., Kerguelen Land, Heard I., Macquarie Islands, Paulet I., and Dundee I.

|                                                      |                                                                                       |                                         |
|------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------|
| <i>a, h</i> Ad. sk.                                  | Falkland Islands ( <i>Leconte</i> )                                                   | Salvin-Godman Coll.                     |
| <i>c.</i> Vix ad. sk.                                | Falkland Islands.                                                                     | Sir W. Burnett &<br>Capt. Fitzroy [P.]. |
| <i>d, e.</i> Ad. sk. et st.                          | Kerguelen Land.                                                                       | Antarctic Exped.                        |
| <i>f-k.</i> Ad, vix ad.<br>et imm. sk.               | Christmas Harbour, Kerguelen<br>Land                                                  | 'Challenger' Exped.                     |
| <i>l.</i> Ad. sk.                                    | Cumberland Bay Point, Ker-<br>guelen Land, June 17 ( <i>R.</i><br><i>McCormick</i> ). | McCormick Bequest.                      |
| <i>m.</i> 3 imm. sk.                                 | Macquarie Islands.                                                                    | Otago Museum [E.].                      |
| <i>n.</i> Ad. skel.,<br>mounted.                     | Falkland Is.                                                                          | Prof. D'Arcy Thomp-<br>son [P.].        |
| <i>o.</i> Ad. skel.                                  | Falkland Is.                                                                          | Antarctic Exped.                        |
| <i>p, q.</i> Ad. skel. &<br>1 skull.                 | Falkland Is.                                                                          | 'Challenger' Exped.                     |
| <i>r.</i> Ad. skel.                                  | Falkland Is.                                                                          | Capt. Abbott [P.].                      |
| <i>s-x.</i> Ad. et 2<br>juv., 3 pull. in<br>spirits. | Falkland Is.                                                                          | 'Challenger' Exped.                     |
| <i>y, z.</i> Ad. head<br>in spirits.                 | Falkland Is.                                                                          | 'Challenger' Exped.                     |

## 2. *Pygoscelis adeliae*.

*Catarrhactes adeliae*, *Hombon & Jacquinet*, *Ann. Sci. Nat.* (2) xvi. p. 320 (1841) [Adelie Land].

*Pygoscelis brevirostris*, *G. R. Gray*, *List B.* pt. iii p. 154 (1844) [lat. 64° 72' S, long 171°, Louis Philippe Land]; *id. Gen. B.* iii p. 164 (1846).

*Eudyptes adeliae*, G. R. Gray, *Gen. B.* iii. p. 641 (1846); *Reichenb. Natatores*, pl. i. fig. 5 (1850); Cassin, *U.S. Expl. Exped.* p. 363 (1858); G. R. Gray, *Hand-l. B.* iii. p. 99 (1871); *id.* *Voy. Erebus & Terror, Birds*, pl. 28 (1875).

*Aptenodytes longicaudata*, Peale, *Zool. U.S. Expl. Exped., Birds*, p. 261, pl. 70. fig. 2 (1848) [lat. 64° 40' S., long. 103° 4' E.].

*Spheniscus adeliae*, *Reichenb. Natatores*, pl. cclxiv. fig. 2219 (1850); *Schleg. Mus. Pays-Bas*, vi. *Urinat.* p. 4 (1867) [Adelie Land; Victoria Land].

*Dasyramphus adeliae*, *Humbon & Jacquinet, Voy. Pôlé Sud, Zool.* iii. p. 155, pl. 33. fig. 1 (1858); *Donald, P. R. Soc. Edinb.* xx. p. 170 (1894) [South Shetlands; Joinville Land; Danger Is.]; *id.* *P. R. Phys. Soc. Edinb.* xii. p. 331 (1894).

*Dasyramphus herculia*, *Finsch, P. Z. S.* 1870, p. 322, pl. xxv. [immature from Antarctic Seas]; *Salvad. Atti Acc. Torino*, ix. p. 634 (1874).

*Eudyptes herculia*, G. R. Gray, *Hand-l. B.* iii. p. 99 (1871).

*Pygoscelis adeliae*, *Hyatt, P. Bost. Soc.* xiv. p. 250 (1872); *Coues, P. Ac. Philad.* 1872, p. 193; *Sclater, Ibis*, 1894, p. 499.

*Adult.* General colour of the upper parts as in *P. papua*; feathers covering the nostrils, forehead, and top of the head like the back, each feather with a bluish-gray extremity; sides of the head, chin, and throat brownish-black, the black terminating in a sharp point on the base of the throat; rest of the underparts pure white. Upper surface of flippers like the back, the inner edge only margined with white; under surface white, edged externally with black and with a terminal blotch of the same colour. Tail composed of 14 feathers. Total length about 30 inches, culmen from nasal feathers to tip 1.1, from gape to tip 2.2, flipper from shoulder to tip 7, tail 7, middle toe and claw 3.25.

*Immature.* Differs in having the bill much smaller, the throat white like the rest of the underparts, and the black patch on the under surface of the flipper wanting.

*Hab.* Antarctic continent: Adelie Land, South Victoria Land, South Shetlands, Joinville I., Danger I., and Louis Philippe Land.

|                           |                                                               |                    |
|---------------------------|---------------------------------------------------------------|--------------------|
| a. Imm. sk.               | Antarctic Seas, Dec. 22.                                      | Antarctic Exped.   |
| b. Imm. sk.               | Antarctic Seas, lat. 72° S.                                   | Antarctic Exped.   |
| c. ♀ ad. sk.              | Antarctic Seas, lat. 72° S.                                   | Antarctic Exped.   |
| d, e. ♂ ad. sk.<br>et at. | Antarctic Seas, lat. 64° S.                                   | Antarctic Exped.   |
| f. Ad. sk.                | Pack Ice, Antarctic Seas ( <i>R. McCormick</i> ).             | McCormick Bequest. |
| g. Ad. sk.                | Possession Island, Victoria Land, Jan. 12 ( <i>R. McC.</i> ). | McCormick Bequest. |
| h. Ad. sk.                | Ice off Louis Philippe Land, Jan. 17 ( <i>R. McC.</i> ).      | McCormick Bequest. |
| i. ♀ ad. sk.              | Ice off Louis Philippe Land, Jan. 1.                          | Antarctic Exped.   |
| k-m. Skeletons.           | Antarctic Seas.                                               | Antarctic Exped.   |

3. *Pygoscelis antarctica*.

*Aptenodytes antarctica*, *Forster, Comment. Gottingensis*, iii. p. 141, pl. iv. (1781); *id. Icon. ined.* pl. 82; *Gmel. S. N.* i. pt. ii. p. 557 (1788); *Latham, Ind. Orn.* ii. p. 879 (1790); *Miller, Cinelia Physica*, pl. xl. (1796).

Antarctic Pinguin, *Latham, Gen. Syn.* iii. pt. ii. p. 565 (1785); *id. Gen. Hist* x. p. 389 (1824).

*Aptenodytes antarctica*, *Bonnat. Tabl. Encycl. Méth.* i. p. 69, pl. 17. fig. 4 (1790).

*Pinguinaria antarctica*, *Shaw in Miller, Cinelia Physica*, p. 78 (1796).

*Spheniscus antarcticus*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 67 (1825); *Reichenb. Natatores*, pl. ii. fig. 737 (1850); *Schlegel, Mus. Pays-Bas*, vi. *Urinst.* p. 5 (1867) [Falkland Is.; Weddell I.].

*Pygoscelis antarctica*, *G. R. Gray, List B.* pt. iii. p. 154 (1844) [lat. 64° S.]; *Hyatt, P. Bust. Soc.* xiv. p. 250 (1872); *Coues, P. Ac. Philad.* 1872, p. 199; *Steinen, Internat. Polarforsch. Deutschen Exped.* ii. pp. 237, 276 (1890) [S. Georgia]; *Donald, P. R. Soc. Edinb.* xx. p. 174 (1894) [lat. 64° 12' S., long. 55° 40' W., off Seymour I.]; *id. P. R. Phys. Soc. Edinb.* xii. p. 334 (1894).

*Eudyptes antarctica*, *G. R. Gray, Gen. B.* iii. p. 641 (1846); *Reichenb. Natatores*, pl. cclxiv. fig. 2221 (1850); *Sclater, P. Z. S.* 1861, p. 47; *Abbott, Ibis*, 1861, p. 164 [Falkland Is.]; *G. R. Gray, Hand-l. B.* iii. p. 99 (1871); *id. Voy. Erebus & Terror, Birds*, pl. 26 (1875); *Sclater, Ibis*, 1894, p. 500.

*Adult.* Upper parts blue-grey, much like those of *P. adeliae*, but the tips of the feathers are more brightly coloured; lores, a band above the eye, throat, sides and fore part of neck, and rest of underparts pure white; a narrow clearly marked black line crossing the throat in a semicircle from ear to ear. Upper surface of flipper like the back, and edged internally with white; under surface white, with the outer margin black and a black terminal patch. Tail composed of 12 feathers in adult birds, 14 in young birds; the outermost pair drop out and are wanting in the adult. Total length about 30 inches, culmen from feathers on nasal opening to tip 1.4, from gape to tip 2.65, flipper from shoulder to tip 7.5, tail 5, middle toe and claw 3.1.

*Adult in worn plumage.* Upper parts brownish-black, the blue-grey margins to the feathers almost entirely worn off.

*Hab.* Falkland Islands, Weddell Island, South Georgia, and off Seymour I. (lat. 64° 12' S., long. 55° 40' W.).

- |                                  |                                                        |                  |
|----------------------------------|--------------------------------------------------------|------------------|
| a. ♂ ad. st.                     | Antarctic Seas, lat. 64° 9' S.,<br>long. 56° W.        | Antarctic Exped. |
| b. ♀ ad. sk.                     | Antarctic Seas, lat. 64° 10' S.,<br>long. 54° W., Jan. | Antarctic Exped. |
| c. Skull [out of<br>specimen b]. |                                                        |                  |

### 3. CATARRHACTES.

#### 3. CATARRHACTES.

|                                                                                                                                                   | Type.                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| <i>Catarractes</i> , <i>Briss.</i> ( <i>nec Mochring</i> , 1752) <i>Orn.</i> vi. p. 102 (1760) .....                                              | <i>C. chrysocome</i> . |
| <i>Eudypetes</i> , <i>Vieill. Analyse</i> , pp. 67, 70 (1816); <i>Hyatt, P. Bost. Soc.</i> xiv. p. 244 (1872) .....                               | <i>C. chrysocome</i> . |
| <i>Chrysocoma</i> , <i>Steph.</i> in <i>Shaw's Gen. Zool.</i> xiii. pt. i. p. 57 (1825) .....                                                     | <i>C. chrysocome</i> . |
| <i>Microdypetes</i> , <i>M.-Edwards, Ann. Sci. Nat.</i> (6) ix. art. 9, p. 58 (1880); <i>Reichenow &amp; Schadow, J. f. O.</i> 1883, p. 112 ..... | <i>C. chrysocoma</i> . |

Bill moderately long and very stout, the culminicorn divided by a deep groove from the latericorn, which is much swollen towards the base. Feathering at the angle of the gape leaving the tomia and greater part of the base of the upper and lower mandibles exposed. Tail relatively very long, composed of 14 or 16 feathers; upper tail-coverts short. A superciliary band of more or less elongate golden feathers.

*Range.* Tierra del Fuego and the Falkland Islands to the New Zealand Archipelago.

#### *Key to the Species.*

- I. Superciliary bands not united with one another on the forehead, which is uniform black.
  - A. Superciliary band of golden feathers greatly elongate posteriorly ..... *chrysocome*, p. 635.
  - B. Superciliary band of golden feathers not greatly elongate posteriorly.
    - a. Sides of the culminicorn divergent from the nasal opening; narrow white edge to the inner margin of the flipper composed of one row of feathers ..... *pachyrhynchus*, p. 639.
    - b. Sides of the culminicorn running almost parallel to one another from the nasal opening; white inner margin of the flipper wider and composed of two rows of feathers ..... *sclateri*, p. 640.
- II. Superciliary bands uniting with one another on the forehead.
  - c. Lores, chin, throat, and sides of the head and neck blackish ..... *chrysolophus*, p. 641.
  - d. Lores, chin, throat, and sides of the head and neck pure white ..... *schlegeli*, p. 643.

#### 1. *Catarrhactes chrysocome*.

The Penguin, *Edwards, Glean. N. Hist.* i. p. 40, pl. 49, ii. pl. 94 [head on left] (1748) [immature].

Le Gorfou, *Briss. Orn.* vi. p. 102 (1760).

*Phaeton demersus*, *Linn. S. N.* i. p. 219 (1766) [*nec Diomedes demersa*, p. 214].

The Red-footed Penguin, *Pennant, Phil. Trans.* lviii. p. 93 (1766); *Latham, Gen. Syn.* iii. pt. ii. p. 572 (1785); *id. Gen. Hist.* x. p. 396 (1824).

Le Manchot hupé de Sibirie, *D'Aubert. Pl. Hist.* x. pl. 59 [no. 984].



- Aptenodytes chrysocome*, *Forster, Comment. Gottingensis*, iii. p. 135, pl. I (1781); *Gmel. S. N. i. pt. ii. p. 555* (1788); *Latham, Ind. Orn. ii. p. 878* (1790); *Peale, Zool. U.S. Expl. Exped., B. p. 259* (1848); *Abbott, Ibis*, 1860, p. 337 [Falkland Is., habits]; *Layard, Ibis*, 1869, p. 379 [Crozetts Is.], p. 460 [semialbino vars.].
- Aptenodytes catarractes*, *Forster, Comment. Gottingensis*, iii. p. 145 (1781); *Gmel. S. N. i. pt. ii. p. 558* (1788); *Latham, Ind. Orn. ii. p. 881* (1790).
- Le Manchot sauteur, *Buff. Hist. Nat. Ois. ix. p. 409* (1783).
- Crested Penguin, *Latham, Gen. Syn. vi. p. 561* (1785); *id. Gen. Hist. x. p. 385* (1824).
- Aptenodyta gorfua*, *Bonnat. Tabl. Encycl. Méth. i. p. 68* (1790) [immature].
- Aptenodyta chrysocome*, *Bonnat. Tabl. Encycl. Méth. i. p. 68, pl. 17. fig. 2, pl. 18. fig. 4* (1790) [adult].
- Pinguinaria cirrhata*, *Shaw in Miller, Cimelia Physica*, p. 92 (1790).
- Aptenodytes crestata*, *Miller, Cimelia Physica*, pl. xlix. (1796).
- Pinguinaria cristata*, *Shaw & Nodd. Nat. Misc. xi. pl. 437* (July 1, 1800).
- Stonecracker Penguin, *Weddell, Voy. South Pole*, p. 57 (1825) [South Georgia; habits].
- Catarrhactes chrysocome*, *Vieill. Gal. Ois. ii. p. 245, pl. 298* (1825).
- Chrysocoma saltator*, *Steph. in Shaw's Gen. Zool. xiii. pt. i. p. 58, pl. 8* (1825).
- Chrysocoma catarractes*, *Steph. in Shaw's Gen. Zool. xiii. pt. 1, p. 61* (1825); *Gould, Handb. B. Austr. ii. p. 517* (1865) [S. Australia].
- Catarrhactes chrysocome*, *Brandt, Bull. Acad. St. Pétersb. ii. p. 315* (1837).
- Eudyptes demersus*, *G. R. Gray, List B. pt. iii. p. 155* (1844) [Falkland I., except specimens  $\delta$  &  $\sigma$ ].
- Eudyptes chrysocome*, *G. R. Gray, Gen. B. iii. p. 641* (1846); *Gould, B. Austr. vii. pl. 83* (1848) [Tasmania]; *Slater, P. Z. S. 1860, p. 390* [Falkland Is.]; *Abbott, Ibis*, 1861, p. 164; *r. Pelz. Reise Novara, Vog. p. 140, pl. v. (1865)* [St. Paul I.]; *Hyatt, P. Bost. Soc. xiv. p. 251* (1872); *Coues, P. Ac. Philad. 1872, p. 202* [part]; *Slater & Salvin, P. Z. S. 1878, p. 654*; *Slater, P. Z. S. 1879, p. 311* [eggs from Falkland Is. & Tristan da Cunha]; *Slater & Salvin, Voy. Chall, Zool. Birds, p. 128, pl. xxx. (1880)* [Falkland Is.; Kerguelen; Tristan da Cunha]; *Meyer, SB. ges. Isis, Dresden, 1884, Abh. 1, p. 58* [Java; accidental]; *Buller, B. N. Zeal. 2nd ed. ii. p. 290* (1888); *id. P. Z. S. 1889, p. 84*; *Studer, Forschungsreise S.M.S. Gazelle, iii. p. 105, pls. 16, 17* (1889) [Prince Edward I. & Marion I.].
- Catarractes chrysocoma*, *Reichenb. Natatores, pl. i a. fig. 14<sup>b</sup>* (1850).
- Catarractes chrysolopha*, *Reichenb. Natatores, pl. i a. figs. 12<sup>b</sup>, 13<sup>b</sup>, & 14* (1850).
- Eudyptes nigrivestis*, *Gould, P. Z. S. 1860, p. 418* [Falkland Is.]; *Slater, P. Z. S. 1861, p. 46*; *Gould, Ann. Mag. N. H. (3) vii. p. 218* (1861); *Abbott, Ibis*, 1861, p. 163; *Slater, P. Z. S. 1868, p. 527*.
- Spheniscus chrysocome*, *Schleg. Mus. Pays-Bas, vi. Urinat. p. 6* (1867) [part of synonymy].
- Spheniscus chrysolophus*, *Schleg. (nec Brandt) Mus. Pays-Bas, vi. Urinat. p. 7* (1867).
- Spheniscus catarractes*, *Schleg. Mus. Pays-Bas, vi. Urinat. p. 8* (1867).
- Eudyptes catarractes*, *G. R. Gray, Hand-l. B. iii. p. 98* (1871); *Hyatt, P. Bost. Soc. xiv. p. 251* (1872) [Falkland Is.].

- Eudytes nigriventris* (*sic*), *G. R. Gray, Hand-l. B.* iii. p. 98 (1871).  
*Eudytes chrysolopha*, *Coues (nec Brandt), P. Ac. Philad.* 1872, p. 204; *Kidder & Coues, Bull. U.S. Nat. Mus.* ii. p. 45 (1875) [Kerguelen; habits]; *Sharpe's ed. Layard, B. S. Afr.* p. 790 (1884) [Cape of Good Hope].  
*Eudytes catarrhactes*, *Coues, P. Ac. Philad.* 1872, p. 201.  
*Eudytes filholi*, *Hutton, P. Linn. Soc. N. S. W.* iii. p. 334 (1878) [Campbell I.].  
*Eudiptula serresiana*, *Oustalet, Ann. Sci. Nat.* (6) viii. art. 4 (1878) [Port Charruca, Tierra del Fuego].  
*Eudytes saltator*, *Sharpe, Phil. Trans.* clxviii. p. 160, pl. viii. fig. 1 (1879) [Kerguelen; Crozette Is.]; *Moseley, Notes Voy. Chall.* pp. 100 (with figure), 102, 103, 108, 109, 110, 114, 170 (1892).  
*Microdptes serresiana*, *M.-Edwards, Ann. Sci. Nat.* (6) ix. art. 9, p. 58, pl. 20 (1880).  
*Eudytes chrysocoma*, *M.-Edwards, Ann. Sci. Nat.* (6) ix. pl. 17. figs. 3 & 4, pl. 18. figs. 6 & 7 (1880).

*Adult.* General colour above dark slate, each pointed feather black, edged externally with dark bluish slate; top of the head black, the feathers on the crown and occiput greatly lengthened and forming a long straggling crest, of which the longest feathers measure over three inches; a golden yellow eyebrow-stripe, commencing behind the nasal feathers and extending along the sides of the crown, the posterior feathers being greatly lengthened (many measuring fully 3·5 inches) and mingling with the long black crest-feathers; sides of the head, chin and throat smoky-black; rest of underparts pure white. Flipper above like the back, edged internally with white; below white, the outer margin, tip, and a patch on the basal part of the inner margin black. In very old specimens the amount of black at the extremity increases in extent. Bill of the same type as that of *C. pachyrhynchus* (see woodcut, p. 640). Tail composed of 16 feathers. "Iris deep pink; bill orange; tarsus and toes white" (*Kidder*). Total length about 25 inches.

*Immature birds* differ in having the chin ashy white and the throat blackish. (*Mus. Rothschild.*)

In *still younger examples* the throat is ashy white, and the yellow superciliary crest merely indicated by a yellowish-white line. (*Mus. Rothschild.*)

The bird described by M. Oustalet as *Eudiptula serresiana* is *C. chrysocome* in this plumage.

Adult specimens from various localities measure as follows:—

|                      | Bill.          |                |                | Flipper. | Tail.    | Middle toe & claw. |
|----------------------|----------------|----------------|----------------|----------|----------|--------------------|
|                      | Nasal feathers | Gape           | Exposed        |          |          |                    |
|                      | to tip.<br>in. | to tip.<br>in. | culmen.<br>in. |          |          |                    |
| Falkland Islands ... | 1·15–1·3       | 1·9–2·1        | 1·5–1·8        | 6·6–6·8  | 3·4*–4·0 | 2·55               |
| Kerguelen .....      | 1·4            | 2·2            | 1·8            | 6·6–6·8  | 4·15     | 2·6–2·85           |
| Tristan da Cunha ... | 1·35           | 2·35           | 1·8            | 6·9      | 3·4–3·7* | 2·8                |
| New Zealand group.   | 1·3–1·55       | 2·1–2·3        | 1·75–1·9       | 6·8–7·0  | 4·3–4·4  | 2·5–2·85           |

\* Tail apparently not fully grown.

*Hab.* Tierra del Fuego, Falkland Islands, South Georgia, Cape of Good Hope, Tristan da Cunha, Prince Edward I., Marion I., Crozette Islands, Kerguelen Land, St. Paul Island, Tasmania, South Australia; Campbell, Antipodes and Bounty Islands; New Zealand group.

|                                   |                                                       |                                 |
|-----------------------------------|-------------------------------------------------------|---------------------------------|
| a. Juv. sk.                       | Tierra del Fuego.                                     | P. L. Sclater, Esq.<br>[E.]     |
|                                   | (Co-type of <i>E. serresiana</i> , Oustalet.)         |                                 |
| b. Ad. sk.                        | King George's Bay, West Falkland.                     | Antarctic Exped.                |
| c. Ad. sk.                        | Berkeley Sound, East Falkland.                        | Antarctic Exped.                |
| d. f. Ad. sk.                     | Falkland Islands ( <i>Leconte</i> ).                  | Salvin-Godman Coll.             |
| g, h. ♂ ad. sk.                   | Falkland Islands.                                     | 'Challenger' Exped.             |
| i. Young in down.                 | Falkland Islands.                                     | 'Challenger' Exped.             |
| j, k. ♂ ad. sk.                   | Kerguelen Land.                                       | 'Challenger' Exped.             |
| l. Ad. sk.                        | Royal Sound, Kerguelen ( <i>A. E. Eaton</i> ).        | Transit of Venus Exped.         |
| m, n. ♂ ad. et imm. sk.           | Christmas Harbour, Kerguelen.                         | 'Challenger' Exped.             |
| o, p. ♂ ad. et imm. st.           | Tristan da Cunha, Nov. 18.                            | Museum of Economic Geology [P.] |
| q-s. Ad. sk.                      | Inaccessible Island, Tristan da Cunha group, Oct. 16. | 'Challenger' Exped.             |
| t. Imm. sk.                       | Bounty Island, S. Pacific.                            | Purchased.                      |
| u. Ad. sk.                        | Cape Seaa.                                            | Sir Andrew Smith [P.]           |
| v. Ad. sk.                        | Campbell Island.                                      | Otago Museum [E.]               |
| w. d'. Adult et imm (in spirits). | Tristan da Cunha.                                     | 'Challenger' Exped.             |
| e'. Adult skel. (mounted).        | Tristan da Cunha.                                     | 'Challenger' Exped.             |
| f. Adult skeleton.                | Tristan da Cunha.                                     | 'Challenger' Exped.             |
| g' f'. Adult skeleton.            | Kerguelen Land.                                       | 'Challenger' Exped.             |
| k'. Adult skeleton.               | Falkland Islands.                                     | Purchased.                      |
| l'. Adult skeleton.               | New Zealand.                                          | Capt. Stokes, R.N. [P.]         |
| m' Skull.                         |                                                       |                                 |

## 2. *Catarrhactes pachyrhynchus*.\*

*Eudypes pachyrhynchus*, *G. R. Gray, Voy. Erebus & Terror, Birds*, p. 17 (1845) [Waikowaiti]; *id. Gen. B.* iii. p. 641, pl. 176 (1846); *Sclater, Ibis*, 1862, p. 243; *G. R. Gray, Hand-l. B.* iii p. 98

\* Through the kindness of Prof. Hutton I have received a minute description and photographs of the typical specimen of *E. vittatus* in the Canterbury Museum, Christchurch. There can scarcely be any doubt that the species is founded on a worn and faded example of *C. pachyrhynchus*.

### CATARRHACTES VITTATUS.

*Eudypes vittata*, *Finsch, Ibis*, 1875, pp. 112-114 [Dunedin], *Sharpe, Voy. Erebus & Terror, Birds*, App. p. 35 (1875).

*Eudypes vittatus*, *Buller, B. N. Zeal* 2nd ed. ii p. 299 (1888).

*Adult* Appears to be most nearly allied to *C. pachyrhynchus*, but the upper

(1871); *Hutton, Ibis*, 1872, p. 250 [Chatham Is.]; *Finsch, J. f. O.* 1872. p. 261; 1874, p. 217; *Reischek, Trans. N. Zeal. Inst.* xvii. p. 193 (1885) [habits]; *Buller, B. N. Zeal.* 2nd ed. ii. p. 287 (1888) [coasts of New Zealand; Snares; Bounty I.]; *Finsch, Ibis*, 1888, p. 309 [Snares]; *Buller, P. Z. S.* 1889, p. 83, pl. ix. fig. 2; *Smith, Ibis*, 1890, p. 462 [frequenting rivers]; *Forbes, Ibis*, 1893, p. 543 [Chatham Is.].

*Catarrhactes pachyrhynchus*, *Reichenb. Natatores*, pl. cclxiv. fig. 2218 (1850).

*Spheniscus chrysocome*, *Schleg. Mus. Pays-Bas*, vi. Urinat. p. 6 (1867) [part].

*Eudyptes chrysocomus*, *Buller, B. N. Zeal.* 1st ed. p. 344, pl. fig. 1 (1873) [North and South Islands, New Zealand].

*Eudyptes atrata*, *Hutton, Ibis*, 1875, p. 114 [melanistic var. from Snares]; *Sharpe, Voy. Erebus & Terror, Birds*, App. p. 35 (1875); *Buller, B. N. Zeal.* 2nd ed. ii. p. 296, pl. xvi. fig. 2 (1888).

*Eudyptes chrysocoma*, *Sharpe (nec Forst.), Voy. Erebus & Terror, Birds*, App. p. 35 (1875).

*Eudyptes chrysocome*, *Sharpe (nec Forst.), Phil. Trans.* clxviii. p. 158, pl. viii. fig. 3 (1879); *Coues, P. Ac. Philad.* 1872, p. 202 [part]; *M-Edwards, Ann. Sci. Nat.* (6) ix. pl. 17. fig. 2, & pl. 18. fig. 5 (1880).

*Adult.* Forehead and crown black; the feathers on the crown not much lengthened and not forming a conspicuous crest; rest of the upper parts as in *C. chrysocome*; a pale golden-yellow eye-stripe commencing behind the feathers, covering the nostril and extending along the side of the crown; the posterior feathers not much lengthened, the longest measuring about 1·8 inch. Sides of the head, chin, and throat smoky-black, often with an ill-defined whitish patch on the side of the throat; rest of the underparts white. Upper surface of the flipper like the back, the inner margin with a narrow white edge, only the *outermost row* of feathers being white; under surface much the same as in *C. chrysocome*. Total length about 28 inches.

This species is most closely allied to *C. selateri*, but may be at once distinguished by the form of the culminicorn, the sides of which are divergent from the nasal openings, as shown in the woodcut (fig. 1, p. 640). The narrow white edge to the inner margin of the flipper and the position of the golden superciliary stripe are also distinctive characters, the former being readily seen.

*Immature.* Differs in having the black chin and throat mottled with white. (*Mus. Rothschild.*)

Tail composed of 16 feathers.

is said to be uniform dark brown, not margined posteriorly with white. Total length about 26 inches.

|                   | Bill.        |                         | Flipper. | Tail. | Middle toe and claw. |
|-------------------|--------------|-------------------------|----------|-------|----------------------|
|                   | Gape to tip. | Exposed part of culmen. |          |       |                      |
|                   | in.          | in.                     | in.      | in.   | in.                  |
| ( <i>Finsch</i> ) | 2·32         | 2·1                     | 7·1      | —     | 2·9                  |
| ( <i>Buller</i> ) | 2·2          | 2·0                     | 6·0      | 1·5   | 3·0                  |

*Hab.* Dunedin, South Island, New Zealand.

A melanistic variety of this species has been described and figured under the name of *Eudyptes atratus* [cf. Buller, *Birds of New Zealand*, 2nd ed. ii. p. 294, pl. xlv. fig. 2 (1858)]. The type was obtained on the Snares, to the south of New Zealand, and is preserved in the Otago Museum.

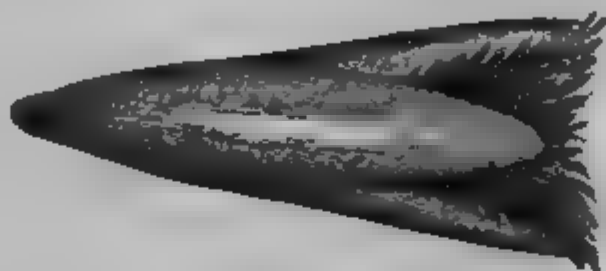


Fig. 1.—Bill of *C. pachyrhynchus*.

A second melanistic variety, supposed to belong to the same species, was forwarded to Mr. Walter Rothschild by Sir Walter Buller. This bird came from the Macquarie Islands, and is without doubt a black variety of *C. schlegeli*. This is clearly shown by the size and shape of the bill.

|       | Bill.                  |              |                 | Flipper. | Tail.    | Middle toe and claw. |
|-------|------------------------|--------------|-----------------|----------|----------|----------------------|
|       | Nasal feathers to tip. | Gape to tip. | Exposed culmen. |          |          |                      |
|       | in.                    | in.          | in.             | in.      | in.      | in.                  |
| ♂ ... | 1.82-1.9               | 2.7-2.8      | 2.3             | 6.9-7.1  | 3.35-3.5 | 2.8-2.9              |
| ♀ ... | 1.7                    | 2.55         | 2.05            | 6.9      | 3.6      | 2.6                  |

*Hab.* New Zealand, Snares Is., Bounty I., and Chatham Islands.

|               |                                             |                                   |
|---------------|---------------------------------------------|-----------------------------------|
| a, b. Ad. sk. | New Zealand.                                | Hon. W. Rothschild [E.]           |
| c. Ad. sk.    | New Zealand.                                | Purchased. (Type of the species.) |
| d. Ad. sk.    | New Zealand.                                | Capt. Stokes [P.]                 |
| e. Ad. st.    | Snares, south of New Zealand.               | Countess of Galloway [P.]         |
| f. Ad. sk.    | Snares, Jan. 1895 ( <i>B. H. Travers</i> ). | Hon. W. Rothschild [E.]           |

### 3. *Catarrhactes sclateri*.

? *Eudyptes pachyrhynchus*, *Hutton (nec Gray)*, *Ibis*, 1850, p. 396 [Auckland I.].

*Eudyptes* sp., *Sclater*, *P. Z. S.* 1888, p. 265.

*Eudyptes sclateri*, *Buller*, *B. N. Zeal.* 2nd ed. ii. p. 289 (1888) [Auckland I.]; *id.* *P. Z. S.* 1889, p. 82, pl. ix. fig. 1.

*Adult.* Very similar to *C. pachyrhynchus*, but may be easily distinguished by the following characters:—The sides of the culmen run almost parallel to one another from the nasal opening (see

### 3. CATARRHACTES.

fig. 2); the inner edge of the flipper is more widely margined with white, the two outer rows of feathers being white; the pale golden-eyebrow-stripe commences immediately above the gape, but in some

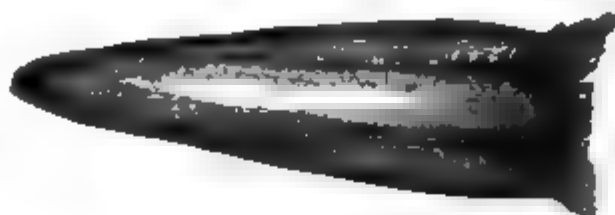


Fig. 2.—Bill of *C. solatari*.

specimens it is indistinctly continued towards the nasal opening, and is one of the least reliable characters. Although Sir Walter Buller first distinguished this species, he appears to have overlooked the really important differences to be found in the shape of the bill and the wider white margin of the wing. Tail composed of 16 feathers. Total length about 28 inches.

In some specimens the upper tail-coverts are mostly white; in others they are uniform dark slate like the back.

*Immature.* Differs from the adult in having the chin and throat mostly white and the superciliary stripes very pale.

|         | Bill                   |              |                 | Flipper. | Tail. | Middle toe and claw. |
|---------|------------------------|--------------|-----------------|----------|-------|----------------------|
|         | Nasal feathers to tip. | Gape to tip. | Exposed culmen. |          |       |                      |
|         | in.                    | in.          | in.             | in.      | in.   | in.                  |
| ♂ ..... | 1·7                    | 2·7          | 2·2             | 8·4      | 4·9   | 3·2                  |
| ♀ ..... | 1·7                    | 2·5          | 2·1             | 7·9-8·3  | 4·6   | 2·8-3·1              |

*Hab.* Campbell, Auckland, Antipodes, and Bounty Islands.

|              |                           |                                         |
|--------------|---------------------------|-----------------------------------------|
| a. Ad. sk.   | Bounty Island, Jan.       | Hon. W. Rothschild [E.].                |
| b. Ad. sk.   | Antipodes Island, Nov.    | Hon. W. Rothschild [E.].                |
| c. ♀ ad. sk. | Auckland Island, Oct. 16. | Zool. Soc. Coll. (Type of the species.) |
| d. Imm. sk.  | Auckland Island.          | Sir Samuel Scott [P.].                  |

### 4. *Catarrhactes chrysolophus*

Macaroni Penguin, *Weddell, Voy. South Pole*, p. 57 (1825) [South Georgia: habits].

*Catarrhactes chrysolophus*, *Brandt, Bull. Acad. St. Petersb.* ii. p. 315 (1837).

*Eudyptes demersus*, *G. R. Gray (nec Linn.)*, *List B.* pt. iii. p. 155 (1844) [specimens *d* and *g*].

*Eudyptes chrysolophus*, *G. R. Gray, Gen. B.* iii. p. 641, pl. 176. fig. 1 (1846); *Abbott, Ibis*, 1860, p. 338 [Falkland Is.: habits]; *id. Ibis*, 1861, p. 163 [Falkland Is.]; *Slater, P. Z. S.* 1860, p. 300 [Falkland Is.]; *id. P. Z. S.* 1863, p. 527 [E. Falkland]; *G. R. Gray, Hand-l. B.* iii. p. 98 (1871); *Hyatt, P. Bost. Soc.* xiv. p. 260 (1872) [Falkland Is.]; *Slater & Salvin, P. Z. S.* 1878, p. 654;

*Sclater*, *P. Z. S.* 1879, p. 311 [eggs from Falkland Is. and Kerguelen Land]; *Sharpe*, *Phil. Trans.* clxviii. p. 157, pl. viii. fig. 3 (1879); *Sclater & Salvin*, *Voy. Chall., Zool., Birds*, p. 127, pl. xxix. (1880) [Kerguelen]; *M.-Edwards*, *Ann. Sci. Nat.* (6) ix. pl. 17. fig. 1 (1880); *Studer*, *Forschungsreise S.M.S. Gazelle*, iii. p. 105 (1889) [Heard I.; Marion I.; Prince Edward I.]; *Steinen*, *Internat. Polarforsch. Deutschen Exped.* ii. p. 277 (1890) [South Georgia].

? *Eudyptes diadematus*\*, *Gould*, *P. Z. S.* 1860, p. 419 [Falkland Is.]; *Sclater*, *P. Z. S.* 1861, p. 46, *Abbott*, *Ibis*, 1861, p. 163; *Gould*, *Ann. Mag. N. H.* (3) vii. p. 218 (1861); *Coues*, *P. Ac. Philad.* 1872, p. 206 [part, Falkland Is.]; *Kidder & Coues*, *Bull. U.S. Nat. Mus.* ii. p. 47 (1875) [Kerguelen & Heard I.].

*Spheniacus diadematus*, *Schlegel*, *Mus. Pays-Bas*, vi. *Urinat.* p. 8 (1867) [part, Falklands].

*Adult*. General colour of upper parts as in *C. chrysocome*; forehead and back of the crown black; feathers of the middle and sides of the crown golden orange at the base with lengthened pointed black extremities, only the longest plumes of the superciliary feathers much lengthened (nearly three inches) and uniform orange; sides of head, chin, and throat smoky-black; the throat with a distinct silvery shade; rest of the underparts white. The upper surface of the flipper like the back, and edged internally with white; below white, blackish along the outer margin, especially towards the tip, and with a black patch at the base of the inner margin.

In some specimens there is a well-marked patch of whitish feathers in the middle of the upper tail-coverts. Bill of the same type as that of *C. pachyrhynchus*. Tail composed of 14 feathers. Total length about 30 inches.

*Immature* birds differ only from the adult in having the basal part of the feathers of the crown and superciliaries more yellow and the bill very much smaller.

|                 | Bill.                  |              |                 | Flipper. | Tail | Middle toe and claw. |
|-----------------|------------------------|--------------|-----------------|----------|------|----------------------|
|                 | Nasal feathers to tip. | Gape to tip. | Exposed culmen. |          |      |                      |
|                 | in.                    | in.          | in.             | in.      | in.  | in.                  |
| ♂. Falkland Is. | 2.0                    | 2.8          | 2.55            | 8.1      | 3.9  | 3.15                 |
| ♂. Kerguelen.   | 2.05                   | 2.9          | 2.4             | 8.0      | 3.5  | 2.95                 |
| ♀. Kerguelen.   | 1.6                    | 2.65         | 2.15            | 7.6      | 3.6  | 2.9                  |

*Hab.* Falkland Islands, South Georgia, Prince Edward I., Marion I., Kerguelen Land and Heard I.

a, b. ♂ ♀ ad. sk. Christmas Harbour, Kerguelen, 'Challenger' Exped. Jan. 7.

c. Ad. sk. [pale variety]. Christmas Harbour, Kerguelen, 'Challenger' Exped. Jan. 7.

\* In this species the chrome-yellow eyebrow-stripes are said to commence at the nostrils. This is not the case in any specimen of *C. chrysolophus* which I have examined. Possibly, as Mr. Slater has suggested, it may be a variety of this species.

|                            |                                       |                     |
|----------------------------|---------------------------------------|---------------------|
| d, e. Imm. sk.             | Falkland Islands ( <i>Leconte</i> ).  | Salvin-Godman Coll. |
| f-h. ♂ ♀ ad. sk.<br>et st. | Falkland Islands, Oct.                | Antarctic Exped.    |
| i, k. Ad. sk.              | Berkeley Sound, E. Falklands,<br>Oct. | Antarctic Exped.    |
| l. Adult (in<br>spirits).  | Falkland Islands.                     | 'Challenger' Exped. |
| m. Adult skel.             | Falkland Islands.                     | 'Challenger' Exped. |

5. *Catarrhactes schlegeli*.

*Spheniscus diadematus*, *Schlegel*, *Mus. Pays-Bas*, vi. Urinat. p. 8 (1867) [part, Macquarie Is. & New Zealand].

*Eudyptes diadematus*, *Coues*, *P. Ac. Philad.* 1872, p. 26 [part, Macquarie Is.].

*Eudyptes chrysolophus*, *Finsch* (*nec Brandt*), *J. f. O.* 1872, p. 262; 1874, p. 224; *Buller*, *B. N. Zeal.* 2nd ed. ii. p. 297 (1888) [New Zealand coast].

*Eudyptes schlegeli*, *Finsch*, *Trans. N. Zeal. Inst.* viii. p. 204 (1876) [Macquarie Is.]; *Buller*, *B. N. Zeal.* 2nd ed. ii. p. 298 (1888) [Macquarie Is. & Dunedin].

*Eudyptes albigularis*, *M.-Edwards*, *Ann. Sci. Nat.* (6) ix. art 9, p. 55, pl. 19 (1880) [Macquarie Is.]; *Reichenow & Schalow*, *J. f. O.* 1882, p. 111.

**Adult.** Nearly allied to *C. chrysolophus*, from which it differs in having the lores, chin, throat, and sides of the head and neck, as well as the rest of the underparts, pure white. As in *C. chrysolophus*, the upper tail-coverts are often mostly white. The bill is of the *C. pachyrhynchus* type, and the tail is composed of 14 feathers. Total length about 30 inches. (*Mus. Rothschild.*)

In a nearly adult bird the chin, lores, and feathers round the eye are smoky-brown. (*Mus. Rothschild.*)

**Immature** birds have the basal part of the crest-feathers canary-yellow instead of orange; the lores, sides of the head, and chin dark smoky-brown, becoming paler on the throat and shading into white on the fore-neck. (*Mus. Rothschild.*)

|                                                                         | Bill.                     |                 |                    | Flipper. | Tail.           | Middle<br>toe<br>and claw. |
|-------------------------------------------------------------------------|---------------------------|-----------------|--------------------|----------|-----------------|----------------------------|
|                                                                         | Nasal feathers<br>to tip. | Gape<br>to tip. | Exposed<br>culmen. |          |                 |                            |
|                                                                         | in.                       | in.             | in.                | in.      | in.             | in.                        |
| Adult. Campbell I. ( <i>Mus.</i><br><i>Rothschild</i> ).                | 2.1                       | 3.0             | 2.5                | 8.8      | 4.0<br>(broken) | 3.3                        |
| ♂. Macquarie I. ( <i>Mus.</i><br><i>Rothschild</i> ).                   | 2.25                      | 3.25            | 2.7                | 8.7      | (in<br>moult)   | 3.3                        |
| Fix ad. Macquarie I. ( <i>Mus.</i><br><i>Rothschild</i> ). [Black var.] | 1.8                       | 2.95            | 2.45               | 8.3      | 3.0             | 2.2                        |

The interesting black variety, forming part of Mr. Rothschild's collection, was obtained on the Macquarie Islands. It is not quite fully adult, as may be seen from the measurements given above.

**Hab.** New Zealand; Macquarie Islands and Campbell Island.

Imm. sk.      Macquarie Is.      Hon. W. Rothschild [H.]  
252



## 4. MEGADYPTES.

Type.

- Catarrhactes*, *Hombon & Jacquinot* [*nec Möhring* (1752), *nec Briss.* (1760)], *Ann. Sci. Nat.* (2) xvi. p. 320 (1841) ..... *M. antipodum*.  
*Megadyptes*, *Milne-Edwards*, *Ann. Sci. Nat.* (6) ix. art. 9, p. 56 (1880); *Reichenow & Schadow*, *J. f. O.* 1882, p. 111 ..... *M. antipodum*.

Bill moderately long and not very stout, the culminicorn being divided by a groove from the latericorn, which is but slightly swollen towards the base. Feathering at the angle of the gape leaving the tomtia and the greater part of the base of the mandibles exposed. Tail relatively short, composed of 20 feathers; upper tail-coverts short. The superciliary bands of short golden feathers unite one with another at the back of the crown. Size moderate.

*Range.* Campbell Island, Auckland Island, Stewart Island, South Island, New Zealand, and Chatham Islands.

1. *Megadyptes antipodum*.

- Catarrhactes antipodes*, *Hombon & Jacquinot*, *Ann. Sci. Nat.* (2) xvi. p. 320 (1841) [Auckland I.].  
*Eudytes antipodes*, *G. R. Gray*, in *Dieffenbach*, *Trav. N. Zeal.* ii. p. 199 (1843); *id.* *Voy. Erebus & Terror, Birds*, p. 17, pl. 27 (1845) [Auckland I., Campbell I., N. Zealand]; *Sclater*, *Ibis*, 1862, p. 243; *Coues*, *P. Ac. Philad.* 1872, p. 199; *Finsch*, *J. f. O.* 1872, p. 262, 1874, p. 218.  
*Pygoscelis antipoda*, *G. R. Gray*, *List B.* pt. iii. p. 154 (1844) [Auckland I., Campbell I.].  
*Eudytes antipoda*, *G. R. Gray*, *Gen. B.* iii. p. 641 (1846); *Reichenb. Natatores*, pl. i fig. 6 (1850); *Cassin*, *U.S. Expl. Exped.* p. 351 (1858); *G. R. Gray*, *Hand-l. B.* iii. p. 99 (1871).  
*Aptenodytes flavilavata*, *Peale*, *Zool. U.S. Expl. Exped., Birds*, p. 260, pl. 70. fig. 1 (1848) [Auckland I.].  
*Pygoscelis antipodes*, *Jacquinot & Pucheran*, *Voy. Pôle Sud, Zool.* iii. p. 156, pl. 33. fig. 2 (1853).  
*Spheniscus antipodes*, *Schlegel*, *Mus. Pays-Bas*, vi. *Urinat.* p. 9 (1867).  
*Eudytes antipodum*, *Buller*, *B. N. Zeal.* p. 346 (1873) [South Island, N. Zealand]; *Sharpe*, *Voy. Erebus & Terror, Birds*, App. p. 35 (1875); *Buller*, *B. N. Zeal.* 2nd ed. ii. p. 294, pl. xlv. fig. 1 (1888) [South Island, N. Zealand]; *Sclater*, *P. Z. S.* 1891, p. 121.  
*Megadyptes antipodes*, *M.-Edwards*, *Ann. Sci. Nat.* (6) ix. art. 9, p. 57 (1880).

*Adult.* General colour above slate-grey; forehead and crown pale golden, with black shaft-stripes and encircled by a golden band of short feathers, commencing above the eyes and bordering the occiput; chin and throat white, with brownish-white middles to the feathers; cheeks pale golden, with brown shafts; base of throat and sides of neck brown; fore-neck, chest, and rest of underparts white; upper surface of the flipper dark slate-grey, margined on both edges with white, the inner margin being rather

wide and including two rows of feathers, under surface white; a patch of whitish feathers more or less visible on the upper tail-coverts. Culmen intermediate in form between that of *C. pachyrhynchus* and *C. sclateri*, but more elongate and slender. Tail composed of 20 feathers. Total length about 30 inches.

*Immature.* Differs from the adult in having the yellow band confined to the sides of the head and not encircling the crown.

In still younger examples the yellow band is entirely absent (*Mus. Rothschild*).

|         | Bill                   |              |                 | Flipper. | Tail.   | Middle toe and claw. |
|---------|------------------------|--------------|-----------------|----------|---------|----------------------|
|         | Nasal feathers to tip. | Gape to tip. | Exposed culmen. |          |         |                      |
|         | in.                    | in.          | in.             | in.      | in.     | in.                  |
| ♂ ..... | 1.85-1.9               | 3.0-3.35     | 2.15-2.25       | 3.2      | 2.4-2.5 | 3.45-3.5             |
| ♀ ..... | 1.8                    | 2.75         | 2.05            | 3.2      | 2.35    | 3.1                  |

*Hab.* The same as that of the genus.

|                       |                                                            |                                    |
|-----------------------|------------------------------------------------------------|------------------------------------|
| a. Ad. sk.            | New Zealand.                                               | Capt. Stokes, R.N.                 |
| b. Ad. st.            | New Zealand.                                               | [P.]                               |
| c. ♂ ad. sk.          | Otago, South Island, Nov. 7.                               | Zool. Soc. Coll. Otago Museum [E.] |
| d, e. Ad. et imm. sk. | Auckland Island.                                           | Antarctic Exped.                   |
| f. Ad. st.            | Auckland Island.                                           | Countess of Galloway [P.]          |
| g. Ad. sk.            | Enderby Island, Auckland, Nov. 30 ( <i>R. McCormick</i> ). | McCormick Bequest.                 |
| h. ♀ ad. sk.          | Campbell Island, Dec.                                      | Dr. O. Finsch [C.]                 |
| i. ♂ ad. sk.          | Campbell Island.                                           | Antarctic Exped.                   |

### 5. EUDYPTULA.

*Eudyptula*, Bonap. *C. R.* xlii. p. 775 (1856) ..... Type. *E. minor*.

Bill moderately long and stout, especially in old examples; the groove dividing the culminicorn from the latericorn inconspicuous. Tail very short, composed of 16 feathers, which are almost entirely concealed by the longer upper tail-coverts. No superciliary stripes. Size small.

*Range.* Coasts of South Australia and Tasmania to New Zealand and the Chatham Islands.

#### *Key to the Species.*

- I. Only the inner margin of the flipper narrowly bordered with white ..... *minor*, p. 646.
- II. Both outer and inner margins of the flipper widely bordered with white, and a more or less distinct white patch towards the middle of the inner margin ..... *albicincta*, p. 648.

1. *Eudyptula minor*.

- Aptenodytes minor*, *Forster, Comment. Gottingensis*, iii. p. 147 (1781) [New Zealand; *Forster, Icon. ined.* pls. 84, 85; *Gmel. S. N.* i. pt. ii. p. 558 (1788); *Latham, Ind. Orn.* ii. p. 881 (1790).  
*Little Pinguin*, *Latham, Gen. Syn.* iii. pt. ii. p. 572, pl. 108 (1785); *id. Gen. Hist.* x. p. 387, pl. 180 (1824).  
*Aptenodyta minor*, *Bonnat. Tabl. Encycl. Méth.* i. p. 68, pl. 17. fig. 1 (1790).  
*Chrysocoma minor*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 81 (1825).  
*Spheniscus minor*, *G. R. Gray, in Dieffenbach, Trav. N. Zeal.* ii. p. 199 (1843); *Gould, B. Austr.* vii. pl. 84 (1844) [Islands of Bass's Straits]; *G. R. Gray, Voy. Erebus & Terror, Birds.* p. 16 (1845); *Reichenb. Synop. Av. Natatores*, pl. ii. figs. 732-735 (1850); *Chassin, U.S. Expl. Exped.* p. 355 (1868); *Sclater, Ibis*, 1862, p. 243 [Dusky Bay, S. Island, New Zealand]; *v. Pelz. Reise Novara, Voy.* p. 142 (1865) [N. Zealand]; *Schlegel, Mus. Pays-Bas*, vi. Urinat. p. 10 (1867) [Tasmania; New Zealand]; *Hutton, Ibis*, 1870, p. 306 [breeding]; *Hyatt, P. Bust. Soc.* xiv. p. 247 (1872); *Coues, P. Ac. Philad.* 1872, p. 207.  
*Eudyptes minor*, *G. R. Gray, List B.* pt. iii. p. 155 (1844) [Australia, Tasmania, N. Zealand]; *id. Gen. B.* iii. p. 641 (1846); *id. Hand-l. B.* iii. p. 99 (1871).  
*Aptenodytes undina*, *Gould, P. Z. S.* 1844, p. 57 [Circular Head, Tasmania].  
*Spheniscus undina*, *Gould, B. Austr.* vii. p. 85 (1848) [Waterhouse I.].  
*Eudyptes undina*, *Reichenb. Natatores*, pl. i. a. figs. 9 & 10 (1850).  
*Eudyptula undina*, *Bonap. C. R.* xlii. p. 775, & xliii. p. 646 (1856); *Gould, Handb. B. Austr.* ii. p. 521 (1865); *Buller, B. N. Zeal.* p. 349 (1873); *id. Trans. N. Zeal. Inst.* ix. p. 337, pl. xv. fig. 4 (1876) [adult], *id. B. N. Zeal.* 2nd ed. ii. p. 302 (1888).  
*New Zealand coasts, North, N. & E. Austr. B.* p. 349 (1880); *Schlegel, Tr. N. Zeal. Inst.* xxi. p. 203 (1890) [breeds on Moko-hinou Is.]; *Le Souef, Ibis*, 1895, p. 419 [Albatross I.].  
*Eudyptula minor*, *Bonap. C. R.* xlii. p. 775 (1856); *Gould, Handb. B. Austr.* ii. p. 518 (1865); *Finsch, J. f. O.* 1872, p. 262, 1874, p. 218; *Buller, B. N. Zeal.* p. 347, pl. fig. 2 (1873); *id. Trans. N. Zeal. Inst.* ix. p. 337, pl. xv. fig. 3 (1876) [adult]; *Reischek, Trans. N. Zeal. Inst.* xvii. p. 194 (1885) [habits]; *Buller, B. N. Zeal.* 2nd ed. ii. p. 300 (1888) [New Zealand coasts, North, N. & E. Austr. B. p. 349 (1880)]; *Forbes, Ibis*, 1893, p. 543 [Chatham Is.]; *Le Souef, Ibis*, 1895, p. 419 [Albatross I.].  
*Eudyptula minor*, *Hutton, Ibis*, 1872, p. 250 [Chatham Is.]; *Sharpe, Voy. Erebus & Terror, Birds*, App. p. 35 (1875).

*Adult.* Above slate-blue, each feather with a brownish-grey base and black shaft; chin, throat, fore-neck, and rest of the underparts pure white, the feathers on the throat and fore-neck having brownish bases, while those on the chin, breast, and lower parts are pure white; flippers greyish black, rather narrowly edged with white on the inner margin (only the two outermost rows being white). Tail generally white\*, composed of 16 feathers. Iris silver-grey. Total length about 16 inches.

\* It seems probable that this is caused by the feathers being bleached by the bird's droppings.

# 5. NUDIPTULA.

| Bill.                 |              |                 | Flipper.   | Tail,       | Middle toe and claw. |
|-----------------------|--------------|-----------------|------------|-------------|----------------------|
| Nasal opening to tip. | Gape to tip. | Exposed culmen. |            |             |                      |
| in.<br>1.2            | in.<br>1.75  | in.<br>1.4      | in.<br>4.7 | in.<br>1.35 | in.<br>1.9           |

*Younger examples* appear to differ from the adult only in having the bill less stout and a trifle longer, and the tip of the culmen less hooked.

*Young still partially in down.* Top of the head, nape, shoulders, and greater part of flippers clothed in dark smoky-brown down; throat, sides of the head, chest, and middle of belly covered with white down, inclining to dusky across the fore-neck. Back and part of the flippers clothed in shining dark slate-blue plumage, each feather with a black shaft and slate-blue web with transverse black lines across the extremity. Rest of the breast and underparts white. (*Mus. Rothschild.*)

*Young in down.* Upper parts, flippers, and sides of the body smoky-brown; chin and upper throat dusky white, shading to smoky-brown on the fore-neck; breast and rest of underparts pure white.

*Hab.* Coasts of South Australia and Tasmania to New Zealand and the Chatham Islands.

|                             |                                                                |                         |
|-----------------------------|----------------------------------------------------------------|-------------------------|
| a, b. Vix ad. sk.           | Australia.                                                     | Old Coll.               |
| c, d. Vix ad. st.           | New South Wales.                                               | Australian Museum [P.]  |
| e-A. Ad. et vix ad. sk.     | South Australia.                                               | Salvin-Godman Coll.     |
| f. Vix ad. sk.              | South Australia.                                               | Gould Coll.             |
| k-m. ♂ & ♀ ad. et pull. sk. | Beas's Straits, S. Australia, January ( <i>F. M. Rayner</i> ). | Voy.H.M.S. 'Herald.'    |
| n. Vix ad. sk.              | Tasmania.                                                      | Antarctic Exped.        |
| o. Imm. st.                 | New Zealand.                                                   | Old Coll.               |
| p, q. Vix ad. sk.           | New Zealand.                                                   | Antarctic Exped.        |
| r. Ad. sk.                  | New Zealand.                                                   | Hon. W. Rothschild [E.] |
| s-r. Ad. et imm. sk.        | New Zealand.                                                   | Sir E. Home [P.]        |
| y. Vix ad. sk.              | New Zealand.                                                   | Capt. Stokes, R.N. [P.] |
| z. Imm. sk.                 | Bay of Islands, N. Island, New Zealand.                        | Antarctic Exped.        |
| z', y'. Imm. sk.            | Auckland Dist., N. Island, New Zealand.                        | G. C. Steet, Esq.[P.]   |
| z', d'. Ad. sk.             | Pitt Island, Chatham Islands.                                  | Colonial Museum [E.]    |
| z'. Adult skeleton.         | Australia.                                                     | Seeborn Coll.           |

2. *Eudyptula albosignata*.

*Eudyptula albosignata*, *Finsch*, *P. Z. S.* 1874, p. 207 [Akaroa, South I., New Zealand]; *id.* *J. f. O.* 1874, pp. 174, 219; *Sharpe*, *Voy. Erebus & Terror, Birds*, App. p. 35 (1875); *Finsch*, *Trans. N. Zeal. Inst.* viii. p. 203 (1878).

*Eudyptula minor*, *Buller*, *B. N. Zeal.* 2nd ed. ii. p. 300 (1888) [part synonymy].

*Adult*. Very similar to *E. minor*, but larger. The upper parts of a much lighter greyish-blue, both the outer and inner margins of the flippers widely bordered with white, and in addition a more or less distinct white patch towards the middle of the inner margin. Upper tail-coverts as well as the tail-feathers generally white. Tail composed of 16 feathers. Total length about 16·5 inches.

| Bill                  |              |                 | Flipper. | Tail. | Middle toe and claw. |
|-----------------------|--------------|-----------------|----------|-------|----------------------|
| Nasal opening to tip. | Gape to tip. | Exposed culmen. |          |       |                      |
| in.                   | in.          | in.             | in.      | in.   | in.                  |
| 1·3                   | 2·15         | 1·65            | 5·6      | 1·2   | 2·1                  |

*Hab.* Coasts of New Zealand.

|                    |              |                        |
|--------------------|--------------|------------------------|
| a. b. Ad. sk.      | New Zealand. | Colonial Museum [E.].  |
| c. Ad. sk.         | New Zealand. | Sir Samuel Scott [P.]. |
| d. Imm. sk.        | New Zealand. | Sir E. Home [P.].      |
| e. Adult skeleton. | [Tasmania.]  | Eyton Coll.*           |

## 0. SPHENISCUS.

Type.

*Spheniscus*, *Brisson*, *Orn.* vi. p. 96 (1760); *Hyatt*,

*P. Bost. Soc.* xiv. p. 242 (1872) . . . . . *S. demersus*.

*Dypsicles*, *Gloger*, *Hand- u. Hilfsb.* p. 476 (1842) . . . *S. demersus*.

Bill rather long and stout, the groove dividing the culmicorn from the latericorn inconspicuous. Basal part of the upper and lower mandibles furrowed by numerous longitudinal ridges. Tail very short, composed of 18 or 20 feathers, which are almost hidden by the longer upper tail-coverts. Well-developed white superciliary stripes. Size moderate.

*Range*. Cape of Good Hope to the Falkland Islands and Straits of Magellan, extending northwards along the east coast of Peru to the Galapagos Islands and on the west to Rio Grande do Sul.

*Key to the Species.*

- I. Fore-neck between the black bands on the throat and chest pure white.
  - A. White eyebrow-stripe wider, and extending to the lores . . . . . *demersus*, p. 649.
  - B. White eyebrow-stripe narrow, commencing behind the eye . . . . . *humboldti*, p. 650.

\* *Eudyptes* sp., *Eyton*, *Oct. Av.* pl. iv. L. & pl. 38. fig. 1 (1867).

II. A wide black band across the fore-neck between the black bands on the throat and chest.

C. Size larger: base of the lower mandible black; flipper 7.5-9.0 inches in length, and margined internally with white .....

[p. 661.

*magellanicus*,

D. Size smaller: base of the lower mandible orange; flipper 6.9-6.3 inches in length, the inner margin not edged with white ....

*mendiculus*, p. 662.

### 1. *Spheniscus demersus*.

The Black-footed Penguins, *Edwards, Glean. N. Hist.* ii. p. 94, pl. 94. upper figs. and head on left (1748).

Le Manchot tacheté, *Brisson, Orn.* vi. p. 99, pl. ix. (1760) [adult].

Le Manchot, *Brisson, Orn.* vi. p. 97 (1760) [immature].

*Diomedes demersa*, *Linnaeus, S. N.* i. p. 214 (1766) [Cape of Good Hope].

The Lesser Penguin, *Pennant, Phil. Trans.* lviii. p. 97 (1768).

Le Manchot du Cap de Bonne-Espérance, *D'Aubent. Pl. Enl.* x. pl. 57 [no. 382].

Le Manchot des Hottentots, *D'Aubent. Pl. Enl.* x. pl. 58 [no. 1005].

Le Manchot Moyen, p. 402, & Le Manchot à Bec tronqué, p. 411, pl. xxxi., *Buff. Hist. Nat. Ois.* ix. (1783).

Cape Penguin, *Latham, Gen. Syn.* iii. pt. ii. p. 506 (1785); *id. Gen. Hist.* x. p. 381 (1824).

*Aptenodytes demersa*, *Gmel. S. N.* i. pt. ii. p. 557 (1788); *Latham, Ind. Orn.* ii. p. 879 (1790); *Anderson, Ibis*, 1866, p. 324.

*Aptenodytes demersa*, *Bonnater, Tabl. Encycl. Méth.* i. p. 67, pl. 16. fig. 4, & pl. 18. fig. 2 (1790).

*Spheniscus demersus*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 64, pl. 9 (1825); *G. R. Gray, List B.* pt. iii. p. 154 (1844)

[Cape of Good Hope]; *id. Gen. B.* iii. p. 640, pl. 176. fig. 3 (1846); *Reichenb. Natatores*, pl. 1<sup>a</sup>. figs. 11, 12 (1850); *Schlegel, Mus. Pays-Bas*, vi. *Urinat.* p. 10 (1867) [part, Cape of Good Hope]; *Layard, B. S. Afr.* p. 876 (1867); *id. Ibis*, 1869

p. 460 [semialbino var.]; *G. R. Gray, Hand-l. B.* iii. p. 98 (1871); *Gurney, in Anders. B. Damara-land*, p. 348 (1872); *Hyatt, P. Bost. Soc.* xiv. p. 248 (1872) [part, Cape of Good Hope]; *Coues, P. Ac. Philad.* 1872, p. 209 [part, Cape of Good Hope]; *Sclater & Salvin, P. Z. S.* 1878, p. 653; *id. Voy. Chall. Zool., Birds*, p. 124,

pl. xxvii. (1880); *Leverkuhn, J. f. O.* 1889, p. 138; *Oustalet, La Nat.* xix. p. 365 (1891); *Sclater, Ibis*, 1891, p. 476 [breeding in confinement]; *Moseley, Notes Voy. Chall.* p. 133 (1892); *W. L. Sclater, Ibis*, 1896, p. 518, plate [breeding on Dassen I.].

*Aptenodytes palpebrata*, *Licht. ed. Forst. Descrip. Anim.* p. 356 (1844) [immature].

*Endyptes palpebrata*, *G. R. Gray, Gen. B.* iii. p. 641 (1846); *Reichenb. Natatores*, pl. i. figs. 7, 8 (1850).

*Aptenodytes fuscirostris*, *Illiger, fide Schlegel, Mus. Pays-Bas*, vi. *Urinat.* p. 11 (1867).

*Spheniscus palpebratus*, *Cabanis, J. f. O.* 1875, p. 121.

*Spheniscus demersus* (*sic*), *Sharpe's ed. Layard, B. S. Afr.* p. 789 (1884).

**Adult.** Forehead, middle of crown, and nape black, shading into slate-grey on the rest of the upper parts, this colour being most pronounced on the lower back, rump, and upper tail-coverts; chin,

throat, and sides of the head black; a curved black band across the chest, continued down each side of the body to the tail, widest on the sides and becoming very narrow where it passes between the thighs and the belly; a wide superciliary stripe commencing above the lores and continued along the side of the crown; sides and front of neck and rest of the underparts pure white, the breast and belly with irregular scattered spots of black; upper surface of flippers dark blackish grey, below white, with irregular patches and mottlings of black. In some specimens there is a patch of white feathers at the root of the tail. Tail composed of 20 feathers. "Iris dark brown; bill blue-black, with a transverse bar of livid flesh-colour across both mandibles" (*C. J. Andersson*). Total length about 27 inches.

*Immature.* Resembles the immature of *S. humboldti* described below.

|       | Bill.        |                 | Flipper. | Tail.   | Middle toe and claw. |
|-------|--------------|-----------------|----------|---------|----------------------|
|       | Gape to tip. | Exposed culmen. |          |         |                      |
|       | in.          | in.             | in.      | in.     | in.                  |
| Adult | 2.7-2.9      | 2.35-2.5        | 8.0-8.4  | 1.5-1.6 | 2.9-3.0              |

*Hab.* Coasts of South Africa, extending on the West coast at least as far north as Walwich Bay and adjacent islands.

|                                                |                                        |                          |
|------------------------------------------------|----------------------------------------|--------------------------|
| <i>a-d.</i> Ad. sk.                            | Cape of Good Hope, Dec.                | 'Challenger' Exped.      |
| <i>e.</i> Ad. sk.                              | Cape of Good Hope.                     | Old Coll.                |
| <i>f, g.</i> Ad. et ♀ imm. sk.                 | Cape of Good Hope<br>( <i>Lagard</i> ) | Shelley Coll.            |
| <i>h m.</i> ♂ ad. et imm. sk.                  | Cape of Good Hope.                     | Mr. J. Abrahams<br>[P.]. |
| <i>n, o.</i> Ad. et imm. st.                   | Cape of Good Hope.                     | Zool. Soc. Coll.         |
| <i>p o.</i> Pulls. st. et sk.                  | Cape of Good Hope.                     | Old Coll.                |
| <i>t-z.</i> Ad. imm. et pull.<br>(in spirits). | Cape of Good Hope.                     | 'Challenger' Exped.      |
| <i>a', b'.</i> Ad. et juv.<br>skeletons.       | Cape of Good Hope.                     | 'Challenger' Exped.      |
| <i>c'.</i> Imm. skeleton.                      | Cape of Good Hope.                     | Seeborn Coll.            |
| <i>d'.</i> Ad. skeleton.                       | Cape of Good Hope.                     | Mr. J. Abrahams<br>[P].  |

## 2. *Spheniscus humboldti*.

*Spheniscus humboldti*, *Meyen*, *Nor. Act. Acad. Cæs. Leop.-Carol.* xvi. *Suppl.* p. 110, p. 21 (1834) [Peru]; *Tachudi*, *Faun. Peru.* p. 315 (1845-46); *G. R. Gray*, *Gen. B.* iii. p. 640 (1846); *v. Pelz.* *Reise Novara*, *Vog* p. 142 (1865) [Chili]; *Sclater*, *P. Z. S.* 1867, pp. 337, 340; *Reed*, *Ibis*, 1874, p. 83 [Juan Fernandez]; *Salvin*, *Ibis*, 1875, p. 377; *Bartlett*, *P. Z. S.* 1879, pp. 6-9, figs. 1, 2 [moult and habits]; *Sclater & Salvin*, *Voy. Chall.*, *Zool., Birds*, p. 126, woodcut (1880) [Chili, Peru]; *Tacz. Orn. Pérou*, iii. p. 499 (1886).

*Spheniscus demersus*, *Schlegel* (*nec Linn.*), *Mus. Pays-Bas*, vi *Unnat.* p. 10 (1867) [part, Peru]; *Coues*, *P. Ac. Philad.* 1872, p. 209 [part].

*Eudyptes humboldti*, *G. R. Gray*, *Hand-l. B.* iii. p. 99 (1871).

*Adult.* Very closely allied to *S. demersus*, but the white superciliary stripe is much narrower and the curved black pectoral band considerably wider. Tail composed of 20 feathers. Total length about 27 inches.

*Immature.* Differs from the adult in having the chin, throat, and sides of the head smoky-grey mixed with whitish; the sides and front of the neck smoky-brown, and the pectoral band entirely absent. This coloration of the head is remarkable, for the whitish-grey parts are black in the adult, while the dark smoky-brown of the front and sides of the neck become white: in fact the pattern remains, but the coloration is reversed.

| Bill.       |                        |                           |                 |              |                                |
|-------------|------------------------|---------------------------|-----------------|--------------|--------------------------------|
|             | Gape<br>to tip.<br>in. | Exposed<br>culmen.<br>in. | Flipper.<br>in. | Tail.<br>in. | Middle toe<br>and claw.<br>in. |
| ♂ . . . . . | 3.05                   | 2.6                       | 8.4             | 1.4          | 2.9                            |

*Hab.* West coast of South America, Peru and Chili.

|                       |                                      |                        |
|-----------------------|--------------------------------------|------------------------|
| a. Imm. st.           | West coast of South America.         | Purchased.             |
| b. Imm. sk.           | Iquique, Peru ( <i>H. Rowland</i> ). | Salvin-Godman Coll.    |
| c. ♂ ad. sk.          | Chili, Oct. 8.                       | Zool. Soc. Coll.       |
| d, e. Ad. et imm. sk. | Chili ( <i>Weishaupt</i> ).          | Salvin-Godman Coll.    |
| f. Ad. sk.            | Valparaiso.                          | Capt. W. S. Prett [P.] |

### 3. *Spheniscus magellanicus*.

*Aptenodytes magellanica*, *Forster, Comment. Gottingensis*, iii. p. 143, pl. v. (1781) [Straits of Magellan; Staten I.; Tierra del Fuego; Falkland Is.]; *id. Icon. med.* pl. 83; *Gmel. S. N.* i. pt. ii. p. 557 (1788); *Latham, Ind. Orn.* ii. p. 840 (1790); *Müller, Cymelia Physica*, pl. xxxiv. (1790); *Licht. ed. Forst. Descrip. Anim.* p. 351 (1844); *Cunningham, Ibis*, 1868, p. 126.

*Magellanic Pinguin*, *Latham, Gen. Syn.* iii. pt. ii. p. 569 (1785); *id. Gen. Hist.* x. p. 383 (1834).

*Aptenodytes magellanica*, *Bonnat. Tabl. Encycl. Méth.* i. p. 69, pl. 18, fig. (1790).

*Pinguinaria magellanica*, *Shaw in Miller, Cymelia Physica*, p. 67 (1793).

Jack-ass Penguin, *Weddell, Voy. South Pole*, p. 57 (1825) [South Georgia: habits].

*Spheniscus magellanicus*, *Steph. in Shaw's Gen. Zool.* xiii. pt. i. p. 65 (1825); *G. R. Gray, List B.* pt. iii. p. 155 (1844) [Hermit I.]; *id. Gen. B.* iii. p. 640 (1846); *Reichenb. Natatores*, pl. ii. fig. 736 (1850); *Cassin, U.S. Expl. Exped.* p. 353 (1858) [Orange Bay, Cape Horn]; *Abbott, Ibis*, 1860, p. 163 [Falkland Is.]; *Sclater, P. Z. S.* 1860, p. 300 [Falkland Is.]; *id. P. Z. S.* 1868, p. 527 [E. Falkland]; *Sclater & Salvin, Ibis*, 1869, p. 284 [Sta. Magdalena]; *id. P. Z. S.* 1878, p. 653; *Sclater, P. Z. S.* 1879, p. 811; *Sclater & Salvin, Voy. Chall., Zool., Birds*, p. 125, pl. xxviii. (1890) [Port Churrucha; Magellan; Falkland Is.]; *Sharpe, P. Z. S.* 1891, p. 17 [Tom Bay]; *Sclater, P. Z. S.* 1889, p. 547; *id. Ibis*, 1899, p. 144 [Rio de la Plata]; *Berlepsch, Ibis*, 1899, p. 258 [Rio



- Grande do Sul]; *Mossley, Notes Voy. Chall.* p. 486 (1892); *Apsin, Ibis*, 1894, p. 212 [Maldonado].  
*Aptenodytes brasiliensis*, *Licht. ed. Forst. Descrip. Anim.* p. 355 (1844).  
*Eudyptes brasiliensis*, *G. R. Gray, Gen. B.* iii. p. 641 (1846).  
*Aptenodytes magnirostris*, *Peale, Zool. U.S. Expl. Exped., Birds*, p. 263, pl. 71. fig. 1 (1848) [Tierra del Fuego].  
*Spheniscus demersus*, *Cassin (nec Linn.), U.S. Expl. Exped.* p. 354 (1858) [immature; Cape Horn]; *Schlegel, Mus. Pays-Bas*, vi. *Urinat.* p. 10 (1867) [part, Falkland Is.]; *Cunningham, Ibis*, 1868, p. 489; *Hyatt, P. Bost. Soc.* xiv. p. 248 (1872) [part, Tierra del Fuego].  
*Aptenodytes demersa*, *Abbott (nec Linn.), Ibis*, 1860, p. 336 [Falkland I.: habits].  
*Eudyptes magellanica*, *G. R. Gray, Hund-I. B.* iii. p. 99 (1871).  
*Spheniscus demersus*, var. *magellanicus*, *Coues, P. Ac. Philad.* 1872, p. 211.  
*Spheniscus trifasciatus*, *Philippi, Zeit. ges. Naturw.* (2) vii. p. 121, pls. 1 & 2 (1872) [Valdivia, Chili].

*Adult.* Very similar to *S. demersus*, but there is an additional wide band of brownish black across the white fore-neck between the dark throat and curved pectoral band; under surface of flipper white, dotted with black; in some specimens the black dots are nearly wanting. Tail composed of 20 feathers. "Iris brown; edges of eyelids black (not flesh-colour); bill horn-colour; feet in front black mottled with white, behind black all over" (*Dr. Coppinger*). Total length about 28 inches.

*Immature.* Much like the immature of *S. humboldti*, but the breast and belly almost devoid of black spots, and the under surface of the flippers almost pure white, except at the tip and towards the base. "Bill black; legs grey, spotted with black; claws black" (*Dr. Coppinger*).

|             | Bill.               |                        | Flipper. | Tail. | Middle toe and claw. |
|-------------|---------------------|------------------------|----------|-------|----------------------|
|             | Gape to tip.<br>in. | Exposed culmen.<br>in. |          |       |                      |
| ♂ . . . . . | 2.8                 | 2.15                   | 9.0      | 1.4   | 2.9                  |
| ♀ . . . . . | 2.3-2.5             | 2.05                   | 7.5-7.6  | 1.4   | 2.6-2.8              |

*Hab.* Southern coasts of South America, extending north as far as South Chili on the West coast and to Rio Grande do Sul on the East; Falkland Islands and South Georgia.

|               |                                                                |                           |
|---------------|----------------------------------------------------------------|---------------------------|
| a. ♂ ad. sk.  | Corral, Valdivia, South Chili, Oct. 21 ( <i>A. A. Lane</i> ).  | Berkeley James Coll.      |
| b. ♀ ad. sk.  | Corral, Valdivia, South Chili, Nov. 3 ( <i>A. A. L.</i> ).     | Berkeley James Coll.      |
| c. Ad. sk.    | Tom Bay, Strait of Magellan, April 7 ( <i>Dr. Coppinger</i> ). | Voyage of H.M.S. 'Alert.' |
| d. ♂ imm. sk. | Tom Bay, Strait of Magellan, Feb. 17 ( <i>Dr. Coppinger</i> ). | Voyage of H.M.S. 'Alert.' |

# 6. SPHENIBUS.

|                        |                                                           |                           |
|------------------------|-----------------------------------------------------------|---------------------------|
| e. ♂ imm. sk.          | Port Churrucha, Strait of Magellan, Jan. 12.              | 'Challenger'              |
| f. ♀ ad. sk.           | St. Martin's Cove, Hermit Island, Oct. 27 (R. McCormick). | McCormick Bequest.        |
| g. Ad. sk.             | Maxwell's Harbour, Hermit Island.                         | Antarctic Exped.          |
| h. ♀ ad. sk.           | Falkland Islands, Jan. 31.                                | 'Challenger' Exped.       |
| i. Ad. st.             | [Falkland Islands.]                                       | Old Coll.                 |
| k. Adult (in spirits). | Falkland Islands.                                         | 'Challenger' Exped.       |
| l. Adult skeleton.     | Falkland Islands.                                         | 'Challenger' Exped.       |
| m. Adult skeleton.     | Falkland Islands.                                         | Salvin-Godman Coll.       |
| n. Adult skeleton.     | Falkland Islands.                                         |                           |
| o. Sternum.            | Tom Bay, Strait of Magellan (Dr. Coppinger).              | Voyage of H.M.S. 'Alert.' |

## 4. Spheniscus mendiculus.

*Spheniscus mendiculus*, *Sundevall*, *P. Z. S.* 1871, pp. 126, 129 [Galapagos Is.]; *Salvin*, *Tr. Zool. Soc.* ix. pl. lxxxix. (1876); *Ridgway*, *P. U.S. Nat. Mus.* xii. p. 119 (1890) [Albemarle Island].

*Adult.* Most nearly allied to *S. magellanicus*, and, as in that species, there is a wide smoky-brown band across the middle of the white fore-neck between the blackish throat and pectoral band; but the chin and upper part of the throat are white, and the superciliary stripe is very much narrower and joined to the throat by a narrow band. Upper surface of the flipper uniform blackish slate, with no trace of a white margin on the inner edge; under surface black, with a wide white band down the middle and a whitish patch towards the middle of the inner margin. The bill is remarkably long and slender, the basal two-thirds of the under mandible yellow, the tip and upper mandible blackish. Tail composed of 18 feathers. Total length about 20 inches.

|                                    | Bill.               |                        | Flipper. | Tail. | Middle toe and claw. |
|------------------------------------|---------------------|------------------------|----------|-------|----------------------|
|                                    | Gape to tip.<br>in. | Exposed culmen.<br>in. |          |       |                      |
| ♂ .....                            | 2.75                | 2.4                    | 6.3      | 1.1   | 2.5                  |
| ♂ ( <i>Mrs. Rothschild</i> ) ..... | 2.5                 | 2.4                    | 6.3      | 0.9   | 2.4                  |
| ♀ ( <i>Mrs. Rothschild</i> ) ..... | 2.4                 | 2.15                   | 5.9      | 0.8   | 2.35                 |

*Hab.* Galapagos Islands.

|              |                    |                             |
|--------------|--------------------|-----------------------------|
| a. ♂ ad. sk. | Galapagos Islands. | Salvin-Godman Coll.         |
| b. Ad. st.   | Galapagos Islands. | Dr. R. Bowdler Sharpe [P.]. |

## ADDENDA.

Page 112. The name of *Ardea picata* being preoccupied by Raffles (see p. 247), the species will require a new name, and I propose to call it *Notophoxyx flavirostris*.

Page 170, line 11, for "Syrictet" read "Sirycter."

" line 16, read "*Ardea cyanocephala* (nec Molina)." The proper name for this species should be *Syriyina sibilatrix* (Tomm.).

| Add:—                                                                      |                            | Page 340. <i>Phalacrocorax carbo</i> . |
|----------------------------------------------------------------------------|----------------------------|----------------------------------------|
| <i>t</i> <sup>1</sup> - <i>w</i> <sup>4</sup> . ♂ ♀ ad. et imm. sk. et st. | Cromarty Firth, March.     | G. A. St. Quintin, Esq. [P.]           |
| <i>x</i> <sup>2</sup> . ♂ ad. sk.                                          | Naesland, S. Norway, Feb.  | Christiania Museum [P.]                |
| <i>y</i> <sup>3</sup> . ♂ imm. sk.                                         | Asher, S. Norway, Oct.     | Christiania Museum [P.]                |
| <i>z</i> <sup>4</sup> . ♂ imm. sk.                                         | Grimstad, S. Norway, Sept. | Christiania Museum [P.]                |
| <i>a</i> <sup>1</sup> , <i>b</i> <sup>2</sup> . ♂ imm. sk.                 | Trapani, Sicily.           | Joseph S. Whitaker, Esq. [P.]          |
| <i>c</i> <sup>1</sup> - <i>e</i> <sup>1</sup> . ♂ ♀ ad. et imm. sk.        | Tunis, Feb.                | Joseph S. Whitaker, Esq. [P.]          |

| Add:—                                                               |                              | Page 364. <i>Phalacrocorax graculus</i> . |
|---------------------------------------------------------------------|------------------------------|-------------------------------------------|
| <i>u</i> <sup>1</sup> - <i>t</i> <sup>1</sup> . ♂ ♀ ad. et imm. sk. | Cromarty Firth, March 10.    | G. A. St. Quintin, Esq. [P.]              |
| <i>u</i> <sup>2</sup> . ♂ ad. sk.                                   | Stavanger, S.W. Norway, May. | Christiania Museum [P.]                   |

### Page 368. Subsp. α. *Phalacrocorax desmaresti*.

Mr. Joseph I. S. Whitaker has kindly lent me for examination five specimens of *Phalacrocorax desmaresti*, three adults and two in first autumn plumage, with the breast and underparts white.

They measure as follows:—

|               | Culmen. | Wing.          | Tail.          | Tarsus. |                                                                       |
|---------------|---------|----------------|----------------|---------|-----------------------------------------------------------------------|
|               | in.     | in.            | in             | in.     |                                                                       |
| ♀ ad. sk. ... | 2·8     | 10·1           | 5 1            | 2 3     | Bay of Gomenizza, Epirus, June 9 ( <i>Lord Lilford</i> ).             |
| Ad. sk. ...   | 2·95    | 10·3           | 4·8            | 2 4     | 1 of Rossa, Bay of Teulada, Sardinia, May 25 ( <i>Lord Lilford</i> ). |
| ♀ vix ad sk.  | 2·75    | 9·5            | 4·1<br>(worn)  | 2·3     | Staudia I., Crete, April 7 ( <i>Lord Lilford</i> ).                   |
| Juv sk. .     | 2 65    | 9·2<br>(worn). | 4 9            | 2·3     | Bay of Gomenizza, Epirus, June 9 ( <i>Lord Lilford</i> ).             |
| Juv sk. .     | 2 85    | 9·7            | 4·4<br>(worn). | 2 2     | 1. of Rossa, Bay of Teulada, May 25 ( <i>Lord Lilford</i> ).          |

Page 383. Add:—

18 a. *Phalacrocorax harrisi*.

*Phalacrocorax harrisi*, *Rothschild*, *Bull. B. O. C.* vii. no. liv. p. iii (1898) [Narborough I., Galapagos Group].

"*Adult*. Upperside brownish-black, the bases of the feathers blackish-grey; scapulars and wing-coverts dark hoary-grey, with black borders; a number of white filaments scattered about the head and neck. Underside a mixture of pale brown and grey; tail black; quills blackish brown, with greyish tips on the outer margin."

"This bird is the largest known Cormorant, being if anything bigger than the extinct *P. perspicillatus*, and its wings are quite soft and incapable of flight, and of about the same size as the wings of the Great Auk (*Alca impennis*)."

Wing of *P. harrisi* 7.0–7.5 inches.

Wing of *A. impennis* 6.7 inches.

"*Hab.* Narborough Island, Galapagos Islands." (*L. W. Rothschild*).

Add:—

Page 430. *Sula cyanops*.

|              |                                                         |                      |
|--------------|---------------------------------------------------------|----------------------|
| s. ♂ ad. sk. | Christmas I., Indian Ocean<br>( <i>C. W. Andrews</i> ). | Sir John Murray [P.] |
|--------------|---------------------------------------------------------|----------------------|

Add:—

Page 432. *Sula piscator*.

|               |                                                         |                      |
|---------------|---------------------------------------------------------|----------------------|
| p'. Juv. sk.  | Christmas I., Indian Ocean<br>( <i>C. W. Andrews</i> ). | Sir John Murray [P.] |
| q'. Skeleton. | Christmas I., Indian Ocean<br>( <i>C. W. A.</i> ).      | Sir John Murray [P.] |

Page 434. Add:—

5 a. *Sula websteri*.

*Sula websteri*, *Rothschild*, *Bull. B. O. C.* vii. no. liv. p. lii (1898) [Clarion I., Galapagos Group].

"*Adult* in white plumage closely resembling *S. piscatrix*, having the same hoary-grey on the primaries, but at once distinguishable by its dark brownish-grey tail; the bill is also more slender, and the red at the base of the mandible is more extended. Young in grey plumage somewhat variable, very different from the young of *S. piscatrix*, being not so dark above and with the feathers of the back uniform brown, not edged with light grey; below darker than the young of *S. piscatrix*. Size of *S. piscatrix*."

"*Hab.* Clarion I., Galapagos, and the neighbouring seas." (*L. W. Rothschild*).

Add:—

Page 436. *Sula sula*.

|               |                                                         |                      |
|---------------|---------------------------------------------------------|----------------------|
| ♂. ♀ juv. sk. | Christmas I., Indian Ocean<br>( <i>C. W. Andrews</i> ). | Sir John Murray [P.] |
| ♂. Skeleton.  | Christmas I., Indian Ocean<br>( <i>C. W. A.</i> ).      | Sir John Murray [P.] |

Add:— Page 443. *Fregata aquila*.

- i', k'. ♀ ad. sk. Christmas I., Indian Ocean, Sir John Murray [P].  
Nov. 13 (C. W. Andrews).  
l'. ♂ skeleton. Christmas I., Indian Ocean Sir John Murray [P].  
(C. W. A.).

Add:— Page 447. *Fregata ariel*.

- b'-d'. ♂ ♀ ad. sk. Christmas I., Indian Ocean, Sir John Murray [P].  
Nov. (C. W. Andrews).

Add:— Page 451. *Phaethon rubricauda*.

- x, y. Pull. (in Christmas I., Indian Ocean Sir John Murray [P].  
spirits). (C. W. Andrews).

Add:— Page 455. *Phaethon fulvus*.

- e-g. ♂ ♀ ad. et juv. Flying-fish Cove, Christmas Sir John Murray  
sk. I., Indian Ocean, Aug., [P].  
Sept., Dec. (C. W. Andrews).  
h-k. ♂ ♀ skeletons. Flying-fish Cove (C. W. A.). Sir John Murray  
[P].

Add:— Page 487. *Colymbus septentrionalis*.

- i'. ♀ ad. sk. Smolen Islands, N. Norway, Dr. R. B. Sharpe [P].  
May 30.  
k', l'. ♂ ad. et Mabel Island, Franz Josef Jackson-Harmsworth  
juv. sk. Land, Aug. 10 (F. G. Expedition [P].  
Jackson).  
m'. ♀ ad. sk. Bell I., Franz Josef Land, Jackson-Harmsworth  
Aug. 10 (F. G. J) Expedition [P].  
n'. ♀ ad. sk. Petropavlovsk, Kamschatka, G. E. H. Barrett-  
autumn. Hamilton, Esq. [P].

Page 507. *Podiceps fluviatilis*.

Add to synonymy:—

- Podiceps philippensis*, Theobald (nec Bonnat.), J. A. S. B. xxiii.  
p. 603 (1854); Ball, Str. F. vii. p. 233 (1878).  
*Podiceps minor*, Stoliczka (nec Gmel.) J. A. S. B. xli. pt. ii. p. 256  
(1872); Hume, Str. F. i. p. 268 (1873); Adams, Str. F. i. p. 402  
(1873); Butler, Str. F. iv. p. 31 (1876); Fairbank, Str. F. v.  
p. 410 (1877); Hume & Davison, Str. F. vi. p. 490 (1878); Cripps,  
Str. F. vii. p. 313 (1878); Scully, Str. F. viii. p. 364 (1879);  
Vidal, Str. F. ix. p. 93 (1880); Butler, Str. F. ix. p. 439 (1880);  
Barnes, Str. F. ix. p. 460 (1880); Reid, Str. F. x. p. 85 (1881);  
Davidson, Str. F. x. p. 326 (1882); Davison, Str. F. x. p. 418  
(1883); Barnes, Journ. Bomb. N. H. Soc. i. p. 61 (1886), vi. p. 291  
(1891); Hume, Str. F. xi. p. 348 (1888).

Page 514, lines 20 and 32, for *P. minor* read *P. fluviatilis*.

Page 521. The reference *Tachybaptus dominicus*, Holland, Ibis, 1892, p. 214 [Argentine Rep.], should be placed under *P. americanus*, p. 524.

Add:— Page 524. *Podiceps americanus*.

|                           |                              |                     |
|---------------------------|------------------------------|---------------------|
| <i>p', q'.</i> ♂ ad. et ♀ | Espartillar, Argentine Rep., | A. H. Holland, Esq. |
| imm. sk.                  | March, June.                 | [C.].               |

Add:— Page 532. *Podiceps nigricollis*.

*Podiceps nigricollis*, Hume, Str. F. i. p. 266 (1873).

Page 535, line 39. The reference to Baird, Brewer, & Ridgw. Water-B. N. Amer. ii. p. 434 (1884) should be placed above under the heading *Dytes nigricollis californicus*.

Add:— Page 549. *Æchmophorus major*.

|                            |                              |                     |
|----------------------------|------------------------------|---------------------|
| <i>r, s.</i> ♂ ad. et imm. | Espartillar, Argentine Rep., | A. H. Holland, Esq. |
| sk.                        | Feb., Oct.                   | [C.].               |

Add:— Page 553. *Podilymbus podiceps*.

|                     |                              |                     |
|---------------------|------------------------------|---------------------|
| <i>δ.</i> ♀ ad. sk. | Espartillar, Argentine Rep., | A. H. Holland, Esq. |
|                     | July 16.                     | [C.].               |



# ALPHABETICAL INDEX.

---

**abbotti** (Ibis), 264.  
**abbotti** (Sula), 431.  
**Abdimia**, 291, 292.  
**abdimii** (Abdimia), 292.  
**abdimii** (Ciconia), 292.  
**abdimii** (Sphenorhynchus), 293.  
**Abeltera**, 423.  
**Abou Hannes**, 4.  
**Acalot**, 34.  
**adamsi** (Colymbus), 486, 487, 498, 500.  
**adamsi** (Urinator), 501.  
**adeliae** (Catarrhactes), 631.  
**adeliae** (Dasyramphus), 633.  
**adeliae** (Eudytes), 633.  
**adeliae** (Pygoscelis), 630, 632, 633.  
**adeliae** (Spheniscus), 633.  
**adspersus** (Botaurus), 261.  
**Æchmophorus**, 502, 549.  
**egyptius** (Nycticorax), 150.  
**æolus** (Phalacrocorax), 361, 362.  
**æquinoctialis** (Ardea), 106, 138, 213.  
**æthereus** (Phaëthon), 451, 452, 454, 456, 457, 459.  
**æthiopica** (Ibis), 4, 6, 7, 8, 10, 264.  
**æthiopicus** (Geronticus), 5.  
**æthiopicus** (Tantalus), 4.  
**æthiopicus** (Threskiornis), 5.  
**affinis** (Ardea), 115, 217.  
**affinis** (Egretta), 115.  
**affinis** (Herodias), 114.  
**affinis** (Podiceps), 542.  
**African Shag**, 407.

**africanoides** (Carbo), 407.  
**africanus** (Carbo), 402, 407.  
**africanus** (Graculus), 356, 407.  
**africanus** (Halieus), 407.  
**africanus** (Hydrocorax), 407.  
**africanus** (Microcarbo), 407.  
**africanus** (Pelecanus), 407.  
**africanus** (Phalacrocorax), 336, 339, 356, 407.  
**agami** (Agamia), 135, 274.  
**agami** (Ardea), 135.  
**agami** (Doriponus), 135.  
**agami** (Doryphorus), 135.  
**agami** (Herodias), 135.  
**Agami Heron**, 135.  
**Agamia**, 58, 135.  
**Aigrette**, 118.  
**Aigrette rousse**, 106.  
**Aigrette rousse de la Louisiane**, 106.  
**aja** (Platalea), 54.  
**Ajaja**, 43, 52.  
**ajaja** (Ajaja), 52, 53.  
**ajaja** (Mystrohamphus), 54.  
**ajaja** (Platalea), 52.  
**alba** (Ardea), 90, 92, 96, 99, 102, 171, 270.  
**alba** (Ciconia), 299, 301, 302.  
**alba** (Egretta), 91, 99.  
**alba** (Guara), 40, 266.  
**alba** (Herodias), 89, 90, 91, 96, 99, 270.  
**alba** (Ibis), 21, 39.  
**alba** (Leucibis), 40.  
**alba** (Platalea), 43, 49.  
**alba** (Scolopax), 39.

**alba** (Sula), 426.  
**albescens** (Ciconia), 301.  
**albescens** (Podiceps), 518.  
**albescens** (Podiceps), 504, 505, 518.  
**albicollis** (Ardea), 114.  
**albicollis** (Geronticus), 22.  
**albicollis** (Ibis), 21, 23.  
**albicollis** (Podiceps), 524.  
**albicollis** (Tantalus), 23.  
**albicollis** (Theristicus), 23.  
**albidus** (Phalacrocorax), 331.  
**albigula** (Carbo), 387.  
**albigula** (Graculus), 387.  
**albigula** (Halieus), 387.  
**albigula** (Phalacrocorax), 387.  
**albigularis** (Eudytes), 643.  
**albipennis** (Podiceps), 514.  
**albipennis** (Tachybaptus), 514.  
**albiventer** (Carbo), 392.  
**albiventer** (Graculus), 392.  
**albiventer** (Phalacrocorax), 335, 339, 391, 392.  
**albiventer** (Urile), 392.  
**albiventris** (Graculus), 343.  
**albiventris** (Phalacrocorax), 392.  
**albiciliatus** (Phalacrocorax), 371, 373.  
**albolineata** (Ardea), 139.  
**albolineata** (Demi-egretta), 144.  
**albolineata** (Herodias), 139.  
**albosignata** (Eudiptula), 645, 648.



- albus (Anastomus), 307.  
 albus (Erodias), 91.  
 albus (Eudocimus), 39, 266.  
 albus (Falcinellus), 40.  
 albus (Phaeton), 454.  
 albus (Phalacrocorax), 368.  
 albus (Tantalus), 39.  
 Alca, 563, 564.  
 Alca, 559.  
 alca (Alca), 559.  
 Alcina, 560.  
 aleutica (Phaleris), 599.  
 aleutica (Uria), 599.  
 aleuticus (Ptychoramphus), 599.  
 aleuticus (Ptychorhamphus), 599.  
 aleuticus (Simorhynchus), 599.  
 alga (Uria), 575.  
 algeriensis (Graculus), 406.  
 algeriensis pygmaeus (Graculus), 406.  
 Alle, 560, 569.  
 alle (Alca), 569.  
 alle (Alle), 559, 569, 570.  
 alle (Arctica), 570.  
 alle (Cephus), 570.  
 alle (Cephus), 570.  
 alle (Mergulus), 570.  
 alle (Uria), 569.  
 ambiguus (Podiceps), 529.  
 American Bittern, 261.  
 American Jabiru, 314.  
 American Night Heron, 147.  
 American Stork, 297.  
 americana (Butor), 261.  
 americana (Egretta), 95.  
 americana (Mycteria), 314.  
 americana (Nycticorax), 148.  
 americana (Sula), 426.  
 americanus (Graculus), 344.  
 americanus (Nycticorax), 155, 156.  
 americanus (Pelecanus), 482.  
 americanus (Phaethon), 456.  
 americanus (Phaeton), 457.  
 americanus (Podiceps), 524.  
 americanus (Podiceps), 504, 506, 524, 557.  
 amurensis (Ardea), 181.  
 amurensis (Butorides), 172, 181, 182, 279.  
 Anastomus, 292, 306.  
 Ancient Auk, 596.  
 andamanensis (Herodias), 139.  
 Anhinga, 410.  
 Anhinga de Cayenne, 420.  
 Anhinga du Sénégal, 412.  
 Anhinga noir de Cayenne, 420.  
 Anhinga roux, 412.  
 anhinga (Anhinga), 420.  
 anhinga (Plotus), 410, 411, 419.  
 anisodactylus (Podiceps), 554.  
 Anobapton, 590.  
 Antarctic Pinguin, 634.  
 antarctica (Aptenodyta), 634.  
 antarctica (Aptenodytes), 634.  
 antarctica (Eudytes), 634.  
 antarctica (Pinguinaria), 634.  
 antarctica (Pygoscelis), 630, 634.  
 antarcticus (Podiceps), 554.  
 antarcticus (Podilymbus), 554.  
 antarcticus (Spheniscus), 634.  
 anthonyi (Ardea), 290.  
 anthonyi (Butorides), 290.  
 Ancient Auk, 596.  
 antipoda (Eudytes), 644.  
 antipoda (Pygoscelis), 644.  
 antipodes (Catarrhactes), 644.  
 antipodes (Eudytes), 644.  
 antipodes (Megadrytes), 644.  
 antipodes (Pygoscelis), 644.  
 antipodes (Spheniscus), 644.  
 antipodum (Eudytes), 644.  
 antipodum (Megadrytes), 625, 644.  
 antiqua (Alca), 596.  
 antiqua (Fratercula), 596.  
 antiqua (Uria), 593, 596.  
 antiquus (Brachyrhamphus), 596.  
 antiquus (Brachyrhamphus), 593, 596.  
 antiquus (Sylbooyolus), 559.  
 antiquus (Synthliboramphus), 596.  
 antiquus (Synthliboramphus), 595, 596, 598.  
 Apobapton, 590.  
 Aptenodytes, 624, 626.  
 Apterodita, 626.  
 Apterodyta, 626.  
 aquila (Fregata), 442, 443, 444, 655.  
 aquila (Tachypetes), 443.  
 aquila, var. minor (Tachypetes), 443.  
 aquilus (Atagen), 445.  
 aquilus (Attagen), 445.  
 aquilus (Carbo), 443.  
 aquilus (Pelecanus), 443.  
 arboreus (Phalacrocorax), 344.  
 Arctica, 569.  
 arctica (Alca), 616.  
 arctica (Fratercula), 559, 615, 616, 621.  
 arctica (Gavia), 495.  
 arctic glacialis (Fratercula), 617.  
 arctica (Lunda), 617, 620.  
 arctica (Uria), 582.  
 arctica, var.  $\beta$  (Alca), 620.  
 arctica, var. glacialis (Fratercula), 617.  
 arcticus (Cephus), 582.  
 arcticus (Colymbus), 486, 492, 493, 495, 498, 529.  
 arcticus (Eudytes), 493.  
 arcticus (Mergulus), 570.  
 arcticus (Mergus), 493.  
 arcticus (Mormon), 617.  
 arcticus pacificus (Colymbus), 495.  
 arcticus (Podiceps), 529.  
 arcticus (Urinator), 493, 495.  
 Ardea, 56, 86.  
 Ardeiralla, 244.  
 Ardeirallus, 59, 244.  
 Ardeola, 59, 201.  
 ardeola (Nycticorax), 148.  
 Ardeomega, 66.

- ardesiaca* (*Ardea*), 101, 104, 105, 271.  
*ardesiaca* (*Melanophoyx*), 104, 105, 271.  
*Ardetta*, 59, 220.  
*Argala*, 315.  
*argala* (*Ardea*), 315.  
*argala* (*Ciconia*), 315, 319.  
*argala* (*Leptoptilus*), 315, 320.  
*argala* (*Mycteria*), 316.  
*ariel* (*Attagen*), 447.  
*ariel* (*Fregata*), 442, 447, 448, 656.  
*arra* (*Alca*), 579.  
*arra brunnichii* (*Lomvia*), 579.  
*arra* (*Cephus*), 577.  
*arra* (*Lomvia*), 579.  
*arra* (*Uria*), 578.  
*aruensis* (*Ardea*), 113.  
*aruensis* (*Herodias*), 113.  
*aruensis* (*Notophoyx*), 109, 113, 114, 272.  
*arundinaceus* (*Botaurus*), 255.  
*Ash-coloured Heron* from North America, 80.  
*asha* (*Ardea*), 116, 272.  
*asha* (*Demiegretta*), 115, 116.  
*asha* (*Herodias*), 178, 139.  
*asha* (*Leptorodius*), 114, 116, 272.  
*asiatica* (*Ciconia*), 301, 311.  
*asiatica* (*Mycteria*), 310.  
*asiaticus* (*Xenorhynchus*), 310, 311.  
*Atagen*, 442.  
*ater* (*Carbo*), 369.  
*atra* (*Ardea*), 139, 303.  
*atra* (*Herodias*), 139.  
*atrata* (*Eudytes*), 639.  
*atricapilla* (*Ardea*), 172, 173, 174, 178, 278.  
*atricapilla* (*Ardetta*), 174, 178.  
*atricapilla* (*Butorides*), 172, 173, 174, 176, 178, 277, 278.  
*atricapillus* (*Ocniscus*), 173.  
*atriceps* (*Carbo*), 387.  
*atriceps* (*Haliastur*), 390.  
*atriceps* (*Phalacrocorax*), 335, 339, 381, 390, 391.  
*atricollis* (*Ardea*), 71.  
*atroregularis* (*Colymbus*), 483.  
*Attagen*, 442.  
*audax* (*Ardea*), 204.  
*Audubonia*, 66.  
*Auk*, 564.  
*Auk*, Ancient, 596.  
*Auk*, Antient, 596.  
*Auk*, Black-billed, 566.  
*Auk*, Crested, 601.  
*Auk*, Dusky, 601.  
*Auk*, Flat-billed, 603.  
*Auk*, Great, 563.  
*Auk*, Labrador, 616.  
*Auk*, Minute, 605.  
*Auk*, Perroquet, 607.  
*Auk*, Pigmy, 603.  
*Auk*, Puffin, 616.  
*Auk*, Razor-billed, 566.  
*Auk*, Tufted, 612.  
*auritus* (*Carbo*), 370.  
*auritus* (*Colymbus*), 507, 527, 532.  
*auritus* (*Dytes*), 532.  
*auritus* (*Phalacrocorax*), 333, 337, 370, 371.  
*auritus* (*Podiceps*), 529, 532, 535.  
*auritus* (*Podicipes*), 504, 506, 527, 530, 533.  
*auritus*, var. *californicus* (*Podiceps*), 535.  
*australasie* (*Nycticorax*), 159.  
*australis* (*Ardea*), 158, 225, 247, 250.  
*australis* (*Botaurus*), 258.  
*australis* (*Ciconia*), 311.  
*australis* (*Mycteria*), 310, 311.  
*australis* (*Pelecanus*), 483.  
*australis* (*Podiceps*), 546.  
*australis* (*Sula*), 428, 437.  
*australis* (*Xenorhynchus*), 311.  
*autumnalis* (*Falcinellus*), 32.  
*autumnalis* (*Plegadis*), 32, 266.  
*ayaya* (*Platalea*), 53.  
*azreth* (*Ciconia*), 301.  
*azretti* (*Ciconia*), 301.  
*bacchus* (*Ardeola*), 202, 211, 282.  
*bacchus* (*Buphus*), 211.  
*badia* (*Ardea*), 62.  
*badius* (*Nycticorax*), 147.  
*Baguari*, 297.  
*Baguari de la Collar Roxo*, 314.  
*bahamensis* (*Ardea*), 187.  
*bahise* (*Tigrisoma*), 194, 196, 281.  
*bailloni* (*Urinator*), 489.  
*bairdii* (*Graculus*), 300.  
*Balaeniceps*, 237.  
*Bald Ibis*, 17.  
*balthica* (*Alca*), 565, 566.  
*balthica* (*Uria*), 580.  
*balthicus* (*Colymbus*), 493.  
*barbieri* (*Pelecanus*), 480.  
*bassana* (*Lulu*), 426.  
*bassana* (*Morus*), 426.  
*bassana* (*Sula*), 423, 424, 425, 428, 429, 430.  
*bassanus* (*Dysporus*), 426.  
*bassanus* (*Morus*), 426.  
*bassanus* (*Pelecanus*), 425.  
*Bay Ibis*, 30.  
*Bec-Ouvert*, 306.  
*Bec-Ouvert blanc des Indes*, 306.  
*Bec-Ouvert de Pondichery*, 306.  
*bengala* (*Ibis*), 8.  
*bengalensis* (*Falcinellus*), 32.  
*bengalensis* (*Plegadis*), 32.  
*bengalensis* (*Tantalus*), 31.  
*bernieri* (*Ibis*), 4, 7, 264.  
*bernieri* (*Threskiornis*), 7.  
*Biboreau de Cayenne*, 131.  
*bicaudata* (*Ciconia*), 294.  
*biclavata* (*Ciconia*), 294.  
*bicornis* (*Colymbus*), 549.  
*bicornis* (*Podiceps*), 529, 550.  
*bicristatus* (*Carbo*), 360.  
*bicristatus* (*Graculus*), 358, 361.  
*bicristatus* (*Phalacrocorax*), 331, 333, 337, 358, 360, 361.  
*bicristatus* (*Urile*), 358.  
*Bihoreau*, 146.  
*bilineata* (*Ardea*), 247.  
*bilineata* (*Ardetta*), 247.  
*bilophus* (*Carbo*), 371.  
*bilophus* (*Graculus*), 371.  
*Bittern*, 253, 259.  
*Bittern*, American, 261.  
*Bittern*, Brazilian, 194.  
*Bittern*, Common, 255.  
*Bittern*, Crested, 130.

- Bittern from Hudson's Bay, 259.  
 Bittern, Greater, 61.  
 Bittern, Linsated, 194.  
 Bittern, Little, 222, 231.  
 Bittern, Little Brown, 222.  
 Bittern, Minuta, 231.  
 Bittern, Senegal, 203.  
 Bittern, Small, 186.  
 Bittern, Tiger, 194.  
 Bittern, Zigzag, 241.  
 Black and White Dobbick, 527.  
 Black-bellied Darter, 412, 414, 420.  
 Black-bellied Darter, var. A, 420.  
 Black-bellied Darter, var. B, 420.  
 Black-bellied Pelican, 477.  
 Black-billed Auk, 566.  
 Black-billed Tropic Bird, 452.  
 Black-breasted Grebe, 550.  
 Black-chin Grebe, 507.  
 Black-crested White Heron, 171.  
 Black Darter, 420.  
 Black-faced Ibis, 21.  
 Black-footed Penguin, 449.  
 Black Guillemot, 581.  
 Black Guillemot, var. A, 586.  
 Black Guillemot, var. B, 581.  
 Black Guillemot, vars. C & E, 581.  
 Black Guillemot, var. D, 586.  
 Black-headed Ibis, 7.  
 Black Heron, 303.  
 Black Ibis, 17.  
 Black Stork, 303.  
 Black-throated Diver, 493-495.  
 Blew Heron, 72, 100.  
 Blongos, 222.  
 Blongos de Suisse, 222.  
 Blue Heron, 101, 137.  
 Boatbill, 163.  
 Boatbill, Brown, 163.  
 Boatbill, Crested, 163.  
 Boatbill, Spotted, 163.  
 Booby, 436.  
 Booby, Brown, 432.  
 Booby, Brown and White, 430.  
 Booby, Common, 436.  
 Booby, Lesser, 436.  
 Booby, Spotted, 425.  
 Boreal Diver, 489.  
 borealis (Alca), 594.  
 borealis (Colymbus), 487.  
 Bostrechia, 3, 18.  
 botaurulus (Ardea), 204.  
 Botaurus, 59, 153.  
 botaurus (Ardea), 62.  
 bougainvillei (Graculus), 387.  
 bougainvillei (Phalacrocorax), 387.  
 bougainvillei (Carbo), 387.  
 bougainvillei (Phalacrocorax), 335, 338, 387.  
 bougainvillei (Urile), 387.  
 boyenana (Ciconia), 299, 301.  
 brachydactylus (Pelecanus), 482.  
 brachypterus (Brachyrhamphus), 596.  
 brachypterus (Brachyrhamphus), 596.  
 Brachyrhamphus, 590.  
 Brachyrhamphus, 561, 590.  
 brachyrhyncha (Herodias), 289.  
 brachyrhyncha (Mespophox), 85, 87, 269.  
 brachyrhynchos (Herodias), 87.  
 brachyrhynchos (Phalacrocorax), 344.  
 brachyrhynchus (Herodias), 92.  
 brachyrhynchus (Pelecanus), 482.  
 brachyros (Phalacrocorax), 365.  
 brag (Ardea), 77.  
 brackin (Theristicus), 22-23.  
 brasiliensis (Procellaria), 378.  
 brasiliensis (Carbo), 378.  
 brasiliensis (Graculus), 378.  
 brasiliensis (Haliastur), 378.  
 brasiliensis (Haliastur), 378.  
 brasiliensis (Phalacrocorax), 378.  
 brasiliensis (Puffinus), 378.  
 brasiliensis (Tigrisoma), 194, 196, 198.  
 brasiliensis (Aptenodytes), 6-12.  
 brasiliensis (Ardea), 194, 196, 262.  
 brasiliensis (Botaurus), 195.  
 brasiliensis (Dysporus), 438.  
 brasiliensis (Eudiptes), 652.  
 brasiliensis (Graculus), 379.  
 brasiliensis (Haliastur), 378.  
 brasiliensis (Phalacrocorax), 370, 378.  
 brasiliensis (Sula), 433, 436.  
 Brazilian Bittern, 194.  
 Brazilian Petrel, 378.  
 Brazilian Whimbrel, 35.  
 brevipes (Ardea), 173, 278.  
 brevipes (Butorides), 173, 174, 277, 278.  
 brevipes (Nycticorax), 147, 173, 278.  
 brevipes (Oculiscus), 173, 278.  
 brevirostris (Alca), 593.  
 brevirostris (Brachyrhamphus), 593.  
 brevirostris (Brachyrhamphus), 590, 593.  
 brevirostris (Carbo), 400.  
 brevirostris (Haliastur), 400.  
 brevirostris (Ibis), 35.  
 brevirostris (Pelecanus), 471.  
 brevirostris (Phalacrocorax), 336, 339, 400, 401.  
 brevirostris (Podilymbus), 554.  
 brevirostris (Podilymbus), 554, 558.  
 brevirostris (Pygoscelis), 633.  
 brevirostris (Uria), 593.  
 brewsteri (Sula), 424, 425, 439, 440.  
 Bridled or Ringed Guillemot, 575.  
 brissonii (Onocrotalus), 463.  
 Brown and White Booby, 430.  
 Brown Boatbill, 163.  
 Brown Booby, 432.  
 Brown Heron, 135.  
 Brown Pelican, 476, 479.

brunneus (Ardea), 186,  
 280.  
 brunneus (Butorides),  
 187.  
 brunneus (Oeniscus),  
 187.  
 brunnichi (Lomvia), 579.  
 brunnichi (Uria), 574,  
 578.  
 brunnichii (Alca), 578,  
 579.  
 Brunnich's Guillemot,  
 578.  
 Bubulcus, 59, 213.  
 bubulcus (Ardea), 214,  
 217, 282.  
 bubulcus (Ardeola), 215.  
 bubulcus (Bubulcus),  
 215.  
 bubulcus (Buphus), 215.  
 bubulcus (Egretta), 215.  
 bubulcus (Herodias), 215,  
 217.  
 Buff-backed Heron, 215.  
 bullaragang (Ardea),  
 111.  
 Buphus, 201.  
 Butio, 166.  
 Butor, 254.  
 Butor de Brésil, 194.  
 Butor de la baie d'Hud-  
 son, 259.  
 Butor de la Baye de  
 Hudson, 259.  
 Butor, Grand, 60.  
 Butorides, 59, 172.  
  
 cabanisi (Ardea), 199.  
 cabanisi (Botaurus), 199.  
 cabanisi (Heterocnus),  
 198, 281.  
 cabanisi (Tigrisoma),  
 281.  
 caboja (Ardea), 217.  
 cærulea (Ardea), 100,  
 102, 137, 138, 271.  
 cærulea (Egretta), 101.  
 cærulea (Florida), 100,  
 102, 271, 274.  
 cærulea (Herodias), 102.  
 cærulescens (Ardea), 73,  
 101.  
 cærulescens (Geronticus),  
 24.  
 cærulescens (Harpiprion),  
 24.  
 cærulescens (Ibis), 24.  
 cærulescens (Molybdo-  
 phanes), 24, 265.  
 cærulescens (Theristicus),  
 24.

cæruleus (Glaucoerodius),  
 102.  
 caffrensis (Hagedashia),  
 20.  
 caffrensis (Ibis), 20.  
 caffrensis (Tantalus), 19.  
 caffrensis (Theristicus),  
 20.  
 calceolata (Ardea), 115.  
 Caledonian Night-Heron,  
 151.  
 caledonica (Ardea), 158,  
 161, 162.  
 caledonica (Nyctiardea),  
 159.  
 caledonicus (Calhero-  
 dius), 159.  
 caledonicus (Nycticorax),  
 146, 158, 161, 162.  
 Calherodius, 275.  
 californica (Herodias),  
 96.  
 californica (Lomvia), 574.  
 californica (Uria), 574.  
 californicus (Catarractes),  
 574.  
 californicus (Dytes), 535,  
 657.  
 californicus (Pelecanus),  
 461, 478, 479.  
 californicus (Podicipes),  
 505, 506, 535.  
 Calipareus, 503.  
 calipareus (Podiceps),  
 536.  
 calipareus (Podicipes),  
 505, 506, 536, 537.  
 calirhynchus (Pelecanus),  
 467.  
 callipareus juuinensis  
 (Podiceps), 538.  
 callocephala (Nyctiardea),  
 131.  
 calva (Ciconia), 317.  
 calva (Ibis), 17.  
 calvus (Geronticus), 16,  
 17, 18.  
 calvus (Ibis), 16.  
 calvus (Tantalus), 17.  
 campbelli (Phalacro-  
 corax), 335, 338, 387.  
 campbelli (Urile), 387.  
 camtschatica (Phaleria),  
 603.  
 camtschaticus (Simorhyn-  
 chus), 604.  
 cana (Uria), 596.  
 Cancroma, 58, 163.  
 Cancroma, 163.  
 cancropaga (Cancroma),  
 163.

cancropagus (Cochlear-  
 ius), 164.  
 cancropagus (Nycti-  
 corax), 164.  
 candida (Ciconia), 301.  
 candida (Demiegretta),  
 140.  
 candida (Herodias), 91.  
 candida (Piscatrix), 433.  
 candida (Sula), 432.  
 candidissima (Ardea),  
 124, 273.  
 candidissima (Egretta),  
 125.  
 candidissima (Garzetta),  
 125.  
 candidissima (Herodias),  
 125.  
 candidissima (Leuco-  
 phoyx), 124.  
 candidus (Lepturus),  
 454.  
 candidus (Phaëton), 452,  
 453.  
 Cangu, 322.  
 canogularis (Alca), 616.  
 canogularis (Podiceps),  
 540.  
 Cape Pinguin, 649.  
 capensis (Botaurus), 253,  
 257, 258.  
 capensis (Dysporus),  
 423.  
 capensis (Graculus), 352.  
 capensis (Hians), 309.  
 capensis (Pelecanus),  
 352.  
 capensis (Phalacrocorax),  
 332, 336, 352.  
 capensis (Plotus), 413.  
 capensis (Podiceps), 513.  
 capensis (Podicipes), 504,  
 505, 513, 514.  
 capensis (Sula), 424,  
 429.  
 capensis (Tachybaptus),  
 514.  
 capensis (Tachybaptus),  
 513.  
 capillata (Ciconia), 317.  
 capillatus (Carbo), 350.  
 capillatus (Graculus),  
 350.  
 capillatus (Phalacro-  
 corax), 350.  
 capillimentosus (Gracu-  
 lus), 350.  
 Carbo, 330.  
 carbo (Alca), 589.  
 carbo (Cepphus), 582,  
 588.

- carbo (Graculus), 343, 351.  
 carbo (Halieus), 343.  
 carbo (Hydrocorax), 343.  
 carbo (Pelecanus), 340.  
 carbo (Phalacrocorax), 330, 331, 332, 336, 340, 350, 354.  
 carbo major (Phalacrocorax), 344.  
 carbo medius (Phalacrocorax), 344.  
 carbo (Uria), 573, 588, 589.  
 carboides (Graculus), 343.  
 carboides (Pelecanus), 400.  
 carboides (Phalacrocorax), 343.  
 Carbonarius, 331.  
 carinata (Fratercula), 613.  
 carolinensis (Ardea), 125.  
 carolinensis (Colymbus), 554.  
 carolinensis (Pelecanus), 477.  
 carolinensis (Podiceps), 553, 554.  
 carolinensis (Podilymbus), 554.  
 carolinensis (Sylbeocyllus), 554.  
 caroliniana (Fregata), 445.  
 Carphibis, 2, 11.  
 carunculata (Bostrychia), 18.  
 carunculata (Harpiprion), 18.  
 carunculata (Ibis), 18.  
 Carunculated Shag, 384.  
 carunculatus (Geronticus), 18.  
 carunculatus (Graculus), 384, 385, 390, 393.  
 carunculatus (Harpiprion), 18.  
 carunculatus (Hydrocorax), 384.  
 carunculatus (Pelecanus), 384.  
 carunculatus (Phalacrocorax), 334, 338, 381, 384, 385, 386, 390, 392.  
 carunculatus (Uria), 390.  
 Casmerodius, 88.  
 caspia (Ardea), 61.  
 caspicus (Colymbus), 528.  
 caspicus (Podiceps), 528.  
 cassini (Simorhynchus), 604.  
 cassini (Arctica), 599.  
 cassini (Mergulus), 599.  
 Castagneux des Philippines, 511.  
 castanea (Ardea), 213.  
 castanea (Ibis), 31.  
 Castaneous Heron, 203.  
 castaneus (Buphus), 204.  
 castaneus (Tantalus), 30.  
 Cataractes, 572.  
 catarractes (Aptenodytes), 636.  
 catarractes (Eudypetes), 637.  
 catarractes (Spheniscus), 636.  
 Catarrhactes, 624, 635, 644.  
 catarrhactes (Eudypetes), 637.  
 catshyi (Phaeton), 457.  
 Catopropelicanus, 460.  
 caudata (Ibis), 23.  
 caudatus (Geronticus), 23.  
 caudatus (Ibis), 22.  
 caudatus (Scelopax), 23.  
 caudatus (Theristicus), 21, 22, 23, 265.  
 cayannensis (Geronticus), 25.  
 cayannensis (Harpiprion), 25.  
 cayannensis (Podiceps), 549.  
 cayennensis (Tantalus), 25.  
 Cayenne Grebe, 549.  
 Cayenne Ibis, 25.  
 Cayenne Night-Heron, 131.  
 cayennensis (Ardea), 131.  
 cayennensis (Colymbus), 549.  
 cayennensis (Harpiprion), 25.  
 cayennensis (Ibis), 25.  
 cayennensis (Tantalus), 25.  
 Centropelma, 503.  
 Cephus, 288, 572.  
 Ceratoblepharum, 615.  
 Ceratorhyncha, 609.  
 Ceratorrhina, 609.  
 Cerobis, 3, 28.  
 Cerorhina, 609.  
 Cerorhinca, 609.  
 Cerorhyncha, 562, 609.  
 cerorhyncha (Phalaris), 609.  
 Chenorhamphus, 306.  
 chalconotus (Graculus), 369.  
 chalconotus (Phalacrocorax), 333, 337, 369.  
 chalcoptera (Hagedashia), 20.  
 chalcoptera (Ibis), 20, 21, 36.  
 chalcopterus (Tantalus), 35.  
 chalybea (Ardea), 101.  
 chambeyroni (Tachypetes), 448.  
 chantrei (Plotus), 413.  
 Charles-Town Pelican, 476.  
 Chenalopez, 562.  
 Cheniscus, 611.  
 Chenorhamphus, 306.  
 chichi (Numenius), 31.  
 chihu (Numenius), 35.  
 chilensis (Aptenodytes), 625.  
 chilensis (Diomedea), 625.  
 chilensis (Pinguinus), 625.  
 chilensis (Podiceps), 525, 550.  
 chilensis (Podiceps), 524.  
 chiloensis (Aptenodytes), 625.  
 Chimera, 609.  
 Chinese Corvora, 340.  
 Chinese Heron, 227.  
 Chinese Shag, 343.  
 chloriceps (Butorides), 178, 181.  
 chloriceps (Egretta), 177, 178.  
 chloroptura (Ardea), 186.  
 chlororhynchus (Platalea), 49.  
 Chrysocoma, 635.  
 chrysocoma (Catarractes), 636.  
 chrysocoma (Eudypetes), 637, 639.  
 chrysocome (Aptenodytes), 636.  
 chrysocome (Aptenodytes), 636.  
 chrysocome (Catarrhactes), 635, 636.  
 chrysocome (Eudypetes), 636, 639.  
 chrysocome (Spheniscus), 636, 638.  
 chrysocomus (Eudypetes), 639.

- chrysolopha** (Catarractes), 636.  
**chrysolopha** (Eudiptes), 637.  
**chrysolophus** (Catarractes), 641.  
**chrysolophus** (Catarractes), 635, 641, 642, 643.  
**chrysolophus** (Eudiptes), 641, 642.  
**chrysolophus** (Spheniscus), 636.  
**chrysopelargus** (Ardea), 303.  
**Ciceronia**, 600.  
**Cicogne d'Amérique**, 297.  
**Ciconia**, 291, 298.  
**ciconia** (Ardea), 299.  
**ciconia** (Ciconia), 299, 301, 302.  
**Cigogne blanche**, 299.  
**Cigogne brune**, 303.  
**Cigogne de la Guiane**, 314.  
**Cigogne noire**, 303.  
**cincinatus** (Carbo), 373.  
**cincinatus** (Phalacrocorax), 333, 337, 371, 373.  
**cincinnatus** (Graculus), 373.  
**cincinnatus** (Phalacrocorax), 373.  
**cineracea** (Ardea), 77, 115.  
**cineracea** (Herodias), 115.  
**cinerea** (Ardea), 66, 74, 77, 139, 268.  
**Cinereous Heron**, 101.  
**cinereus** (Anastomus), 307.  
**cinereus** (Pseudotantalus), 323, 326.  
**cinereus** (Tantalus), 326.  
**cinnamomea** (Ardea), 227, 236, 237, 242.  
**cinnamomea** (Ardeiralla), 237.  
**cinnamomea** (Ardeola), 237, 242.  
**cinnamomea** (Ardetta), 221, 236, 237, 284.  
**cinnamomea** (Egretta), 237.  
**cinnamomeus** (Botaurus), 236.  
**Cinnamon Heron**, 236.  
**cirrata** (Fratricula), 613.  
**cirrata** (Lunda), 613.  
**cirrata** (Mormon), 612.  
**cirratus** (Hydrocorax), 385.  
**cirratus** (Pelecanus), 385.  
**cirratus** (Alca), 612.  
**cirratus** (Fratricula), 612.  
**cirratus** (Lunda), 559, 612.  
**cirratus** (Phaleris), 613.  
**cirratus** (Pinguinaria), 636.  
**cirratus** (Graculus), 384, 390, 392.  
**cirratus** (Hypoleucus), 390.  
**cirratus** (Mormon), 613.  
**cirratus** (Pelecanus), 355, 385.  
**cirratus** (Phalacrocorax), 384, 385, 386, 390, 392, 393.  
**cirrhocephalus** (Mergulus), 596.  
**cirriger** (Halieus), 354.  
**cirriger** (Phalacrocorax), 353.  
**cirrocephalus** (Arctica), 596.  
**clarkii** (Æchmophorus), 549, 551.  
**clarkii** (Podiceps), 551.  
**claudicans** (Plotus), 489.  
**cochlearia** (Cancroma), 163, 165.  
**cochlearia** (Cymbops), 164.  
**Cochlearius**, 163.  
**cochlearius** (Cochlearius), 164.  
**coco** (Ardea), 73.  
**coco** (Tantalus), 39.  
**cocoi** (Ardea), 66, 72, 194, 268.  
**Cocoi Heron**, 73.  
**colensoi** (Phalacrocorax), 335, 338, 386.  
**Collared Pinguin**, 624.  
**columba** (Alca), 588.  
**columba** (Cephus), 586.  
**columba** (Grylle), 582.  
**columba** (Uria), 572, 586, 587, 588, 589.  
**Colymbetes**, 503.  
**Colymbidæ**, 485.  
**Colymbus**, 486, 502.  
**comata** (Ardea), 203, 205, 206, 208, 217.  
**comata** (Ardeola), 204, 205.  
**comata** (Comatibis), 16, 265.  
**comata** (Egretta), 204.  
**comata** (Geronticus), 16.  
**comata** (Ibis), 16.  
**comata** (Inocotis), 16.  
**Comatibis**, 2, 16.  
**comatus** (Botaurus), 204.  
**comatus** (Buphus), 204.  
**comatus** (Geronticus), 16.  
**Common Bittern**, 255.  
**Common Booby**, 436.  
**Common Corvorant**, 343.  
**Common Frigate-Bird**, 444.  
**Common Gannet**, 428.  
**Common Guillemot**, 574.  
**Common Heron**, 74.  
**Common or White Stork**, 299.  
**Common Puffin**, 617.  
**Common Sea Dove**, 570.  
**Common Shag**, 364.  
**Common Tropic Bird**, 454, 457.  
**comosus** (Colymbus), 528.  
**Compsohalieu**, 331.  
**concinatus** (Graculus), 373.  
**concolor** (Ardea), 139, 140.  
**concolor** (Demiegretta), 139.  
**concolor** (Herodias), 139.  
**congensis** (Plotus), 412.  
**conspicillatus** (Catoptropelicanus), 483.  
**conspicillatus** (Pelecanus), 462, 483.  
**continentalis** (Carbo), 344.  
**cooperi** (Podiceps), 542.  
**Cormoran glauque**, 369.  
**Cormoran Magellanique**, 388.  
**Cormoran noir**, 369.  
**Cormorant**, 329.  
**Cormorant, Crested**, 365.  
**cormoranus** (Carbo), 340.  
**cormoranus** (Halieus), 343.  
**corniculata** (Alca), 621.  
**corniculata** (Fratricula), 615, 620.  
**corniculata** (Lunda), 621.

- corniculata* (Mormon), 620.  
*corniculatus* (Phaleris), 605.  
*cornuta* (Chimerina), 609.  
*cornutus* (Colymbus), 528, 546.  
*cornutus* (Podiceps), 528, 533, 546.  
*coroutus* (Podicipes), 502, 532.  
*coromanda* (Ardea), 215, 217.  
*coromanda* (Buphus), 215.  
*coromanda* (Cancroma), 217.  
*coromanda* (Harodias), 218.  
*Coromandel Heron*, 307.  
*coromandeliana* (Ardea), 307.  
*coromandelianus* (Anas-tomus), 307.  
*coromandelianus* (Buphus), 218.  
*coromandelianus* (Hians), 307.  
*coromandelica* (Ardea), 214, 218.  
*coromandelica* (Ardeola), 215.  
*coromandelicus* (Buphus), 215.  
*coromandelensis* (Ardea), 217.  
*coromandensis* (Bubulcus), 217.  
*coromandas* (Bubaleus), 213, 215, 216, 217, 218, 282.  
*coromandus* (Buphus), 283.  
*coronatus* (Graculus), 407.  
*Cororant*, 340.  
*Cororant*, Chinese, 340.  
*Cororant*, Common, 343.  
*Cororant*, Javan, 402.  
*Cororant*, Red-faced, 358.  
*Cororant*, Violet, 358.  
*Corvi* (Sula), 433.  
*Courlis*, 617.  
*Courlis blanc d'Amérique*, 39.  
*Courlis des bois*, 25.  
*Courlis huppé*, 27.  
*Courlis rouge*, 41.  
*Courlis vert ou Courlis d'Italie*, 30.  
*Courly à col blanc de Cayenne*, 23.  
*Courly à tête nue du Cap de Bonne Espérance*, 17.  
*Courly blanc du Brésil*, 39.  
*Courly brun d'Amérique*, 34.  
*Courly d'Italie*, 29.  
*Courly hupé de Madagascar*, 27.  
*Courly marron*, 29.  
*Courly rouge du Brésil*, 41.  
*Courly varié du Mexique*, 34.  
*Courly verd*, 29.  
*Courly vert de Cayenne*, 25.  
*Crabier*, 202.  
*Crabier blanc et brun*, 207.  
*Crabier bleu*, 100.  
*Crabier caiot*, 203.  
*Crabier cendré*, 101.  
*Crabier de Bahama*, 193.  
*Crabier de Cayenne*, 175.  
*Crabier de Coromandel*, 217.  
*Crabier de la côte de Coromandel*, 217.  
*Crabier de la Louisiane*, 186.  
*Crabier de la Nouvelle Guinée*, 137.  
*Crabier de Mahon*, 203.  
*Crabier de Malac*, 207.  
*Crabier des Philippines*, 241.  
*Crabier du Brésil*, 100.  
*Crabier gris à tête et queue vertes*, 175.  
*Crabier gris-à-fer*, 131.  
*Crabier jaune*, 202.  
*Crabier marron*, 60.  
*Crabier pourpré*, 231.  
*Crabier roix*, 61.  
*Crabier roux à tête et queue vertes*, 186.  
*Crabier roux tacheté*, 202.  
*Crabier tacheté de la Martinique*, 186.  
*Crabier verd*, 186.  
*Crabier vert tacheté*, 186.  
*Crane*, Gigantic, 315, 319.  
*Cranopelargus*, 315.  
*crassirostris* (Calherodius), 161.  
*crassirostris* (Cormorannus), 343.  
*crassirostris* (Nyctiardea), 161.  
*crassirostris* (Nycticorax), 146, 161, 276.  
*craveri* (Brachyrampus), 595.  
*craveri* (Micurus), 594, 595.  
*craveri* (Uria), 595.  
*Crested Auk*, 601.  
*Crested Bittern*, 130.  
*Crested Boatbill*, 163.  
*Crested Cormorant*, 365.  
*Crested Grebe*, 544.  
*Crested Grebe*, Lesser, 528.  
*Crested Grebe or Gaunt*, 546.  
*Crested Heron*, 61.  
*Crested Ibis*, 27.  
*Crested Penguin*, 636.  
*Crested Shag*, 364.  
*Crested Starling*, 601.  
*crinita* (Ardea), 317.  
*crinita* (Uria), 603.  
*crispus* (Pelecanus), 460, 461, 468, 471.  
*cristata* (Alca), 601.  
*cristata* (Aptenodytes), 636.  
*cristata* (Rostrychus), 27.  
*cristata* (Ibis), 27.  
*cristata* (Lophathya), 547.  
*cristata* (Lophotibis), 27, 268.  
*cristata* (Pinguinaria), 636.  
*cristata* (Platalea), 49.  
*cristatella* (Alca), 601, 603.  
*cristatella* (Fratercula), 602.  
*cristatella* (Phaleris), 601, 602, 603.  
*cristatella* (Uria), 601.  
*cristatellus* (Simorhenchus), 600, 601, 602.  
*cristatellus* (Tylorampus), 602.



- cristatellus** (*Tylorhamphus*), 502.  
**cristatus** (*Carbo*), 352, 365, 368.  
**cristatus** (*Colymbus*), 544.  
**cristatus** (*Eudocimus*), 27.  
**cristatus** (*Geronticus*), 27.  
**cristatus** (*Graculus*), 365.  
**cristatus** (*Hydrocorax*), 365.  
**cristatus** (*Leptoptilus*), 318.  
**cristatus** (*Lophotibis*), 27.  
**cristatus** (*Pelecanus*), 354, 474.  
**cristatus** (*Phalacrocorax*), 365, 368.  
**cristatus** (*Podiceps*), 542, 544.  
**cristatus** (*Podicipes*), 502, 505, 507, 543, 544, 546.  
**cristatus** (*Simorhynchus*), 601.  
**cristatus** (*Tantalus*), 27.  
**cristella** (*Phaleris*), 603.  
**croaticus** (*Phalacrocorax*), 368.  
**crumenifera** (*Argala*), 320.  
**crumenifera** (*Ciconia*), 319.  
**crumenifera** (*Leptoptilos*), 319.  
**crumenifera** (*Myoteria*), 320.  
**crumeniferus** (*Leptoptilus*), 315, 319.  
**cubensis** (*Ardea*), 107.  
 **cucullata** (*Ardea*), 157.  
 **cucullatus** (*Calherodius*), 157.  
 **cucullatus** (*Colymbus*), 540, 542.  
 **cucullatus** (*Podiceps*), 541, 543.  
**Cuillière**, 163.  
**Cuillière brune**, 163.  
**cupres** (*Ibis*), 31.  
**Curicaca de Cayenne**, 322.  
**Curlew, Red**, 41.  
**Curlew, White**, 39.  
**Curucán aseytado**, 26.  
**Curucú aplomado**, 24.  
**Curucú ocello jaspeado**, 25.  
**cyanirostris** (*Ardea*), 128.  
**cyanoccephala** (*Ardea*), 156, 170.  
**cyanoccephalum** (*Syrigma*), 170, 277.  
**cyanoccephala** (*Nycticorax*), 145, 156, 276.  
**cyanoccephalus** (*Syrictes*), 170.  
**cyanops** (*Dysporus*), 430.  
**cyanops** (*Sula*), 424, 430, 431, 434, 655.  
**cyanopus** (*Ardea*), 101.  
**cyanura** (*Ardea*), 175, 279.  
**cyanurus** (*Butorides*), 175.  
**Cyclorrhynchus**, 607.  
**Cymbops**, 163.  
**Cyrtopelicanus**, 480.  
**Dabchick**, 508.  
**dactylatra** (*Sula*), 428.  
**Dalmatian Pelican**, 468.  
**Darter, Black**, 420.  
**Darter, Black-bellied**, 412, 414, 420.  
**Darter, New Holland**, 418.  
**Darter, Rufous-winged**, 412.  
**Darter, var. A, Black-bellied**, 420.  
**Darter, var B, Black-bellied**, 420.  
**Darter, White-bellied**, 420.  
**Darters**, 320.  
**Dasyptilus**, 503.  
**Dasyrhamphus**, 630.  
**davisoni** (*Geronticus*), 14.  
**davisoni** (*Graptocephalus*), 14.  
**deaurata** (*Ardea*), 204.  
**delalandii** (*Phalacrocorax*), 351.  
**deleta** (*Alca*), 616.  
**demersa** (*Aptenodyta*), 649.  
**demersa** (*Aptenodytes*), 649, 653.  
**demersa** (*Diomedea*), 649.  
**demersus** (*Eudiptes*), 636, 641.  
**demersus** (*Phaeton*), 635.  
**demersus** (*Spheniscus*), 625, 648, 649, 650, 652.  
**Demi-Aigrette**, 126.  
**Demi-Egret**, 127.  
**Demiégretta**, 58, 136.  
**demurus** (*Spheniscus*), 649.  
**dentatus** (*Onocrotalus*), 481.  
**dentirostris** (*Ibis*), 25.  
**desmarestii** (*Carbo*), 368.  
**desmarestii** (*Graculus*), 368.  
**desmarestii** (*Haliastur*), 368.  
**desmarestii** (*Phalacrocorax*), 333, 337, 368, 654.  
**diadematus** (*Eudiptes*), 642, 643.  
**diadematus** (*Spheniscus*), 642, 643.  
**Dichromanassa**, 57, 106.  
**dierum** (*Ciconia*), 298.  
**dilophus** (*Carbo*), 370.  
**dilophus** (*Graculus*), 370, 373.  
**dilophus** (*Hydrocorax*), 355, 370.  
**dilophus** (*Pelecanus*) (*Carbo*), 370.  
**dilophus** (*Phalacrocorax*), 370, 371, 373.  
**dimidiatus** (*Carbo*), 398.  
**dimidiatus** (*Graculus*), 399.  
**Diplocercus**, 294.  
**disors** (*Ardea*), 147.  
**Disporus**, 423.  
**Dissoura**, 294.  
**Dissura**, 291, 294.  
**Diver, Black-throated**, 493.  
**Diver, Borral**, 489.  
**Diver, Great Northern**, 497.  
**Diver, Grey Speckled**, 488.  
**Diver, Inher**, 498.  
**Diver, Newcastle**, 489.  
**Diver, Northern**, 498.  
**Diver, Red-throated**, 488.  
**Diver, Small Black and White**, 569.  
**Diver, Speckled**, 489.  
**Diver, Striped**, 494.  
**Dobchick**, 529.  
**Dobchick, Black and White**, 527.  
**Dobchick, Bared or Horned**, 527.  
**Dobchick, Greater**, 544.



- dominicensis* (Colymbus), 521.  
*dominicus* (Colymbus), 520.  
*dominicus* (Podiceps), 520.  
*dominicus* (Podiceps), 504, 506, 520, 521.  
*dominicus* (Sylboocyclus), 521.  
*dominicus* (Tachybaptus), 521.  
*dominicus* (Tachybaptus), 521, 657.  
*Doriponua*, 135.  
*Doryphorus*, 135.  
*Dove*, Spotted Greenland, 580.  
*Dry Heron*, 147.  
*dubia* (Alca), 603.  
*dubia* (Ardea), 315, 317, 319.  
*dubia* (Argala), 316.  
*dubia* (Ciconia), 315.  
*dubia* (Phaleris), 601.  
*dubia* (Uria), 601.  
*dubius* (Leptoptilus), 315, 316, 318.  
*dubius* (Simorhynchus), 602.  
*duplicatus* (Colymbus), 528.  
*Dupetor*, 59, 246.  
*Dusky Auk*, 601.  
*Dusky Grebe*, 528.  
*Dusky Pelican*, 476.  
*Dwarf Shag*, 405.  
*Dysaetes*, 648.  
*Dysporus*, 423.  
*Dytes*, 502.  
*Eared Dobchick or Grebe*, 535.  
*Eared Grebe*, 532.  
*Eared Grebe*, var. A, 528.  
*Eared or Horned Dobchick*, 527.  
*edwardian*, Phaeton, 454.  
*Egret*, Great, 95.  
*Egret*, Little, 119, 124.  
*Egret*, Reddish, 106.  
*Egretta*, 88.  
*egretta* (Ardea), 87, 91, 95, 99, 120, 270.  
*egretta* (Garzetta), 120.  
*egretta* (Herodias), 90, 91, 95, 96, 99, 270.  
*egretta* (Ibis), 5.  
*egrettoides* (Ardea), 85, 90.  
*egrettoides* (Egretta), 86.  
*egrettoides* (Herodias), 86, 87.  
*Egyptian Ibis*, 327.  
*elegans* (Ardea), 206, 272.  
*elegans* (Egretta), 272.  
*elegans* (Graculus), 390.  
*elegans* (Sula), 430.  
*Emperor Penguin*, 627, 628.  
*Empharia*, 306.  
*Enygrothreros*, 332.  
*ephippiorhyncha* (Ardea), 313.  
*ephippiorhyncha* (Ciconia), 313.  
*ephippiorhyncha* (Mystaria), 313.  
*Ephippiorhynchus*, 292, 312.  
*episcopa* (Disura), 295.  
*episcopus* (Ardea), 294.  
*episcopus* (Ciconia), 294.  
*episcopus* (Disura), 296.  
*episcopus* (Disura), 294, 295.  
*episcopus* (Melanopelargus), 295.  
*eremita* (Comatibis), 265.  
*eremita* (Upupa), 265.  
*Erodias*, 220.  
*erubescens* (Phaeton), 452.  
*erythrocephalus* (Colymbus), 508.  
*Erythrocnus*, 59, 200.  
*erythrolama* (Ardetta), 235.  
*erythromelas* (Ardea), 234, 235.  
*erythromelas* (Ardeola), 234.  
*erythromelas* (Ardetta), 221, 234, 284.  
*erythromelas* (Botaurus), 234, 235.  
*Erythrophox*, 50, 252.  
*erythropus* (Phalacrocorax), 388.  
*erythropus* (Ardea), 204.  
*erythrorhyncha* (Ibis), 35.  
*erythrorhyncha* (Sula), 432.  
*erythrorhynchus* (Falcinellus), 32.  
*erythrorhynchus* (Pelecanus), 460, 462, 481.  
*Fepatula*, 53.  
*Kudocimus*, 4, 39.  
*Eudypetes*, 635.  
*Eudypetes*, sp., 486.  
*Eudypula*, 625, 645.  
*Eudytes*, 496.  
*eulopha* (Ardea), 245.  
*eulophotes* (Ardea), 139.  
*eulophotes* (Demigretta), 141, 142.  
*eulophotes* (Garzetta), 139.  
*eulophotes* (Herodias), 139, 274.  
*eurythmus* (Botaurus), 243.  
*europaea* (Nyctiardea), 148.  
*europæus* (Nycticorax), 147.  
*europæus* (Sylboocyclus), 508.  
*eurytes* (Podilymbus), 556.  
*eurythma* (Ardeola), 243.  
*eurythma* (Ardetta), 242.  
*eurythmus* (Nannocnus), 242, 243, 285.  
*Euxenura*, 291, 297.  
*excellens* (Tigrisoma), 193.  
*exilis* (Ardea), 231, 235.  
*exilis* (Ardeola), 231.  
*exilis* (Ardetta), 221, 231, 232, 234, 235, 284.  
*exilis* (Botaurus), 231, 284.  
*Falcinellus*, 29.  
*falcinellus* (Falcinellus), 32.  
*falcinellus* (Ibis), 30, 32, 36, 37.  
*falcinellus* (Numenius), 31.  
*falcinellus* (Plegadis), 29, 31, 36, 206.  
*falcinellus* (Plegadornis), 32.  
*falcinellus* (Tantalides), 31.  
*falcinellus* (Tantalus), 29.  
*fasciatus* (Tigrisoma), 194, 196, 197, 281.  
*fasciatus* (Botaurus), 196.  
*featherstoni* (Graculus), 356.  
*featherstoni* (Phalacrocorax), 333, 336, 356.  
*ferruginea* (Ardea), 147, 159.  
*fiber* (Dysporus), 438.  
*fiber* (Pelecanus), 432.

*flaber* (Sula), 432, 437, 440.  
*filamentosus* (Carbo), 350.  
*filamentosus* (Phalacrocorax), 332, 336, 340, 341, 350.  
*filholi* (Eudypetes), 637.  
*finchi* (Phalacrocorax), 400, 401.  
 Flat-billed Auk, 603.  
 Flauta del sol, 170.  
*flava* (Ardea), 194.  
*flavicans* (Egretta), 217, 219.  
*flavicollis* (Ardea), 247, 250, 251.  
*flavicollis* (Ardeiralla), 247, 250, 251.  
*flavicollis* (Ardetta), 247, 249, 250, 251, 285.  
*flavicollis* (Botaurus), 247.  
*flavicollis* (Butorides), 250.  
*flavicollis* (Dupetor), 246, 247, 251, 285.  
*flavicollis* (Herodias), 247.  
*flavigula* (Carbo), 400.  
*flavicollis* (Xanthoecus), 247.  
*flavilarvata* (Aptenodytes), 644.  
*flavipes* (Platalea), 51.  
*flavipes* (Platibis), 51, 52.  
*flavirhynchus* (Phalacrocorax), 398.  
*flavirostris* (Ardea), 92, 98, 217.  
*flavirostris* (Egretta), 87, 92.  
*flavirostris* (Graucalus), 398.  
*flavirostris* (Herodias), 92, 98.  
*flavirostris* (Leptorodatis), 91.  
*flavirostris* (Notophoxyx), 271.  
*flavirostris* (Phaëton), 454, 455, 456.  
*flavirostris* (Phalacrocorax), 344.  
*flavo-aurantius* (Phaëton), 455.  
 Florida, 57, 100.  
*floridanus*, (Graculus), 370, 381.  
*floridanus* (Phalacrocorax), 370, 371.

*fluviatilis* (Oulymbus), 507, 514.  
*fluviatilis* (Podiceps), 508, 514.  
*fluviatilis* (Podicipes), 503, 505, 507, 508, 512, 656.  
*fluviatilis* (Tachybaptus), 508, 512, 514.  
*fluviatilis capensis* (Podiceps), 514.  
*fluviatilis pelzelni* (Tachybaptus), 518.  
 Foolish Guillemot, 573.  
*forsteri* (Aptenodytes), 626, 628.  
 Fou blanc, 432.  
 Fou brun, 432.  
 Fou brun de Cayenne, 378.  
 Fou de Bassan, 425.  
 Fou, Grand, 425.  
 Fou intermédiaire, 426.  
 Fou, Le, 436.  
 Fou tacheté, 425.  
 Fou tacheté de Cayenne, 425.  
*francsii* (Uria), 578.  
 Frank's Guillemot, 578.  
*fratercula*, 562, 615.  
*fratercula* (Mormon), 616.  
*Fraterculinæ*, 560, 561, 599.  
*frazari* (Ardea), 187, 280.  
*frazari* (Butorides), 188.  
*Fregata*, 442.  
*Frégate*, La, 443.  
*Frégate* de Cayenne, 443.  
*Fregatidæ*, 329, 442.  
*Fregatta*, 442.  
*freti hudsonis* (Ardea), 261.  
 Frigate-bird, Common, 444.  
 Frigate-birds, 329.  
 Frigate Pelican, 443.  
 Frigate Pelican, Greater, 444.  
 Frigate Pelican, Lesser, 443.  
 Frigate Pelican, Palmerston, 443.  
 Frigate Pelican, White-headed, 443.  
*fucosus* (Carbo), 395.  
*fucosus* (Graculus), 395.  
*fulica* (Sula), 437.  
*fulvus* (Lepturus), 455.

*fulvus* (Phaëton), 451, 455, 656.  
*fusca* (Ardea), 135, 268.  
*fusca* (Ciconia), 306.  
*fusca* (Sula), 437.  
*fuscescens* (Hydrocorax), 394.  
*fuscescens* (Pelecanus), 394.  
*fuscicollis* (Ardea), 73, 175.  
*fuscicollis* (Graculus), 377.  
*fuscicollis* (Phalacrocorax), 334, 337, 375, 402.  
*fuscirostris* (Aptenodytes), 649.  
*fuscus* (Leptopelicanus), 477.  
*fuscus* (Onocrotalus), 477.  
*fuscus* (Pelecanus), 460, 461, 475, 478, 479, 480.  
*fuscus* (Tantalus), 41.  
*fusus californicus* (Pelecanus), 479.  
*gaimardi* (Carbo), 353.  
*gaimardi* (Graculus), 353.  
*gaimardi* (Haliæus), 353.  
*gaimardi* (Pelecanus), 353.  
*gaimardi* (Phalacrocorax), 332, 336, 353.  
*gaimardi* (S. ictocarbo), 354.  
*galatea* (Ardea), 95.  
*gamia* (Egretta), 135.  
*gangeticus* (Pelecanus), 471.  
 Gannet, 329, 425.  
 Gannet, Common, 426.  
 Gannet, Lesser, 432.  
 Gannet, Soland, 426.  
*gardeni* (Ardea), 147, 155.  
*gardeni* (Nyctiardea), 150.  
*gardeni* (Nycticorax), 147, 155, 156.  
 Gardenian Heron, 147.  
 Gare Fowl, 563.  
*Garza aplomada*, 73.  
*Garza chica blanca con manto*, 125.  
*Garza cuello aplomado*, 175.  
*Garza cuello pardo*, 175.

- Garza grande blanca con manto, 95.  
 Garza jaspada, 195.  
 Garza oscura azulada, 195.  
 Garza parda chorreada, 155.  
 Garza rosa y negro, 234.  
 Garza taya-guira, 155.  
 Garza varia, 235.  
 Garzetta, 57, 118.  
 garzetta (Ardea), 90, 118, 123, 139.  
 garzetta (Egretta), 120.  
 garzetta (Ereodius), 120.  
 garzetta (Garzetta), 118, 120, 207, 272.  
 garzetta (Herodias), 119, 123, 272.  
 Gaunt, 546.  
 Gavia, 486.  
 Gentoo Penguin, 631.  
 Geronticus 2, 17.  
 gigantea (Ibis), 14.  
 giganteus (Pelecanus), 467.  
 Gigantic Crane, 315, 319.  
 gigantodes (Ardea), 67.  
 glacialis adamsi (Colymbus), 501.  
 glacialis (Alca), 566, 617.  
 glacialis (Cephus), 584.  
 glacialis (Colymbus), 486, 487, 48, 490, 497, 500.  
 glacialis (Eudytus), 498.  
 glacialis (Fratricula), 617, 618, 620.  
 glacialis Mergus, 498.  
 glacialis (Mormon), 617, 620.  
 glacialis (Phalacrocorax), 344.  
 glacialis, var. adamsi (Colymbus), 501.  
 glacialis var. torquatus (Colymbus), 498.  
 glacialis (Uria), 584.  
 glacialis (Urinator), 495.  
 Glaucodius, 100.  
 glaucus (Graculus), 369, 378.  
 glaucus (Phalacrocorax), 369.  
 Glossy Ibis, 30.  
 guenardi (Pelecanus), 443.  
 goisagi (Ardea), 169.  
 goisagi (Botaurus), 169.  
 goisagi (Gorsachius), 166, 167, 169, 277.  
 goisagi (Nycticorax), 167, 169.  
 goisagi (Tigrisoma), 169.  
 goisaki (Nycticorax), 169.  
 goliath (Ardea), 66, 68, 69, 268.  
 goliath (Ardeomaga), 67.  
 goliath (Megerodius), 67.  
 gonocephala (Ibis), 17.  
 gorfua (Aptenodytes), 636.  
 Gorsachius, 53, 166.  
 Gorsakius, 166.  
 goasi (Sula), 436.  
 gouldi (Ardetta), 250.  
 gouldi (Dupetor), 246, 249, 250, 251.  
 gouldi (Hypoleucus), 331, 339, 396.  
 gouldi (Phalacrocorax), 331, 339, 396.  
 gouldi (Xanthocephalus), 250.  
 Graculus, 331.  
 gracilis (Halieus), 343.  
 Graculus, 331.  
 graculus (Carbo), 352, 364, 378.  
 graculus croaticus (Phalacrocorax), 368.  
 graculus (Halieus), 365.  
 graculus (Hydrocorax), 365.  
 graculus (Pelecanus), 364.  
 graculus (Phalacrocorax), 331, 333, 337, 364, 365, 368, 378, 381, 654.  
 graculus, var. desmaresti (Carbo), 368.  
 graculus, var. desmaresti (Phalacrocorax), 368.  
 Grand Bitter, 60.  
 Grand Courlis de Cayenne, 23.  
 Grand Fou, 425.  
 Grand Heron d'Amérique, 82.  
 Grand Paille-en-queue, 457.  
 Grand Aigrette, 95.  
 Grand Aigrette d'Amérique, 95.  
 Grand Courlis d'Amérique, 321.  
 Grand Frigate de Cayenne, 443.  
 Graptocephalus, 2, 14.  
 Graucalus, 331.  
 grave (Mormon), 617.  
 grayi (Ardea), 207, 208.  
 grayi (Ardeola), 202, 206, 207, 208, 209, 211, 213, 282.  
 Great Auk, 563.  
 Great Crested Grebe, 544.  
 Great Egret, 95.  
 Great Heron, 82.  
 Great Northern Diver, 497.  
 Great White Heron, 91.  
 Great White Pelican, 462.  
 Greater Bittern, 81.  
 Greater Dobchick, 544.  
 Greater Frigate Pelican, 444.  
 Grebe, 544.  
 Grebe, Black-breasted, 553.  
 Grebe, Black-chin, 507.  
 Grebe, Cayenne, 549.  
 Grebe, Crested, 544.  
 Grebe de Cayenne, 549.  
 Grebe de l'Esclavonie, 528.  
 Grebe, Eared, 532.  
 Grebe, Great Crested, 544.  
 Grebe, Dusky, 528.  
 Grebe, Indian, 513.  
 Grebe, Lesser Crested, 528.  
 Grebe, Little, 507.  
 Grebe, Lonsdale, 553.  
 Grebe, New Holland, 519.  
 Grebe, or Dabchick, 508.  
 Grebe, or Eared Dabchick, 535.  
 Grebe, Red-bill, 553.  
 Grebe, Red-necked, 539, 542.  
 Grebe, Rufous breasted, 529.  
 Grebe, Slavonian, 529.  
 Grebe, Tippet, 514.  
 Grebe, White and Dusky, 528.  
 Grebe, White-winged, 520.  
 Green Cormorant, 366.  
 Green Heron, 186.  
 Green Ibis, 30.  
 Greenland Dove, Spotted, 580.  
 Grey Ibis, 21.  
 Grey Speckled Diver, 488.  
 greyi (Ardea), 139, 140.

greyi (*Demigretta*), 139.  
 greyi (*Egretta*), 139.  
 greyi (*Herodias*), 138.  
 Gripeus, 331.  
 grisea (*Ardea*), 147, 175, 203.  
 grisea (*Butorides*), 175.  
 grisea (*Cancroma*), 175.  
 grisea (*Nyctiardea*), 150.  
 griseigens (*Colymbus*), 539.  
 griseigens (*Podiceps*), 540.  
 griseigens holboellii (*Podiceps*), 543.  
 griseigens (*Lophethya*), 541.  
 griseigens (*Podiceps*), 540, 542.  
 griseigens (*Podiceps*), 505, 507, 539, 541, 543.  
 griseigens, var. holboellii (*Podiceps*), 543.  
 griseo-alba (*Ardea*), 204.  
 griseus (*Buphus*), 173.  
 griseus (*Nycticorax*), 148, 150, 175, 182.  
 griseus (*Tantalus*), 21, 39.  
 groenlandicus (*Grylle*), 582.  
 Grylle, 572.  
 grylle (*Alca*), 582, 585.  
 grylle (*Cephus*), 582.  
 grylle (*Cephus*), 582, 584, 588.  
 grylle (*Colymbus*) 581, 584.  
 grylle, var. mandtii (*Uria*), 585.  
 grylle, var. variegata (*Cephus*), 582.  
 grylle (*Uria*), 558, 569, 572, 580, 581, 584, 587.  
 grylloides (*Uria*), 580.  
 grylloides (*Colymbus*), 581.  
 Guaco, 203.  
 Guara, 39.  
 guarauna (*Falcinellus*), 35.  
 guarauna (*Ibis*), 35.  
 guarauna (*Numenius*), 35.  
 guarauna (*Plegadis*), 29, 34, 35, 266.  
 guttatus (*Scolopax*), 34.  
 Guillemot, 572, 582.

Guillemot, Black, 581.  
 Guillemot, Brunnich's, 578.  
 Guillemot, Common, 574.  
 Guillemot, Foolish, 573.  
 Guillemot, Frank's, 578.  
 Guillemot, Lesser, 573.  
 Guillemot, Marbled, 590.  
 Guillemot, Ringed or Bridled, 575.  
 Guillemot, var. A, Black, 586.  
 Guillemot, var. D, Black, 581.  
 Guillemot, White, 581.  
 gularis (*Ardea*), 114, 115, 116, 272.  
 gularis (*Ardetta*), 245.  
 gularis (*Demigretta*), 115, 272.  
 gularis (*Egretta*), 115.  
 gularis (*Herodias*), 114, 272.  
 gularis (*Leptorodius*), 114, 115, 116, 117, 272.  
 gularis (*Podiceps*), 519.  
 gularis (*Tachybaptus*), 519.  
 Gulosus, 331.  
 guttatus (*Scotus*), 150.  
 gutturalis (*Ardea*), 245.  
 gutturalis (*Ardetta*), 245.  
 gutturalis (*Cancropaga*), 244.  
 gutturalis (*Phalacrocorax*), 351.  
 Gymnoblepharum, 611.  
 Gyralca, 562.  
 Hagedash, 19.  
 hagedash (*Bostrychia*), 20.  
 hagedash (*Geronticus*), 20.  
 hagedash (*Hagedashia*), 19, 20, 265, 266.  
 hagedash (*Harpiprion*), 20.  
 hagedash (*Ibis*), 19.  
 hagedash (*Parnopio*), 20.  
 hagedash (*Phimosus*), 20.  
 hagedash (*Tantalus*), 19.  
 Hagedashia, 3, 19.  
 Harry Pinguin, 628.  
 Haliotor, 331.  
 Halicus, 331.

hermandi (*Geronticus*), 14.  
 Harpiprion, 3, 35.  
 harrisi (*Phalacrocorax*), 654.  
 hebridalis (*Podiceps*), 507.  
 hebridicus (*Colymbus*), 507.  
 hebridicus (*Podiceps*), 505.  
 hectori (*Podiceps*), 546.  
 heliosylus (*Ardea*), 192.  
 heliosylus (*Botaurus*), 192.  
 heliosylus (*Tigrisoma*), 192.  
 heliosylus (*Zonerodius*), 192.  
 heroulis (*Dasyrhamphus*), 633.  
 heroulis (*Eudytes*), 633.  
 hernandezii (*Dysporus*), 433.  
 hernandezii (*Onocrotalus*), 482.  
 Herodias, 57, 88.  
 herodias (*Ardea*), 66, 80, 83, 269.  
 Héron, 74.  
 Heron, Agami, 135.  
 Héron Agamida Cayenne, 135.  
 Heron, Ash-coloured, from North America, 80.  
 Heron, Black-crested White, 171.  
 Héron blanc, 90, 95.  
 Héron blanc à calotte, noire, 171.  
 Héron blanc de la Caroline, 106.  
 Héron blanc du Brésil, 171.  
 Héron blanc huppé de Cayenne, 171.  
 Héron bleuâtre à ventre blanc de Cayenne, 126.  
 Héron bleuâtre de Cayenne, 101.  
 Heron, Blew, 72, 100.  
 Heron, Blue, 101, 137.  
 Heron, Brown, 135.  
 Héron brun de Cayenne, 135.  
 Heron, Buff-backed, 215.  
 Heron, Castaneous, 203.  
 Heron, Cayenne Night, 131.

- Héron cendré, 74.  
 Héron cendré d'Amérique, 100.  
 Héron cendré du Mexique, 100.  
 Héron, Chinese, 227.  
 Héron, Cinereous, 101.  
 Héron, Cinnamon, 238.  
 Héron, Cocoi, 73.  
 Héron, Common, 74, 77.  
 Héron, Coromandel, 307.  
 Héron, Crested, 61.  
 Héron de Brésil, 194.  
 Héron de la Baye de Hudson, 80.  
 Héron de la Côte de Coromandel, 294.  
 Héron, Dry, 147.  
 Héron, Gardenian, 147.  
 Héron, Great, 82.  
 Héron, Great White, 91.  
 Héron, Green, 186.  
 Héron, Gris, 146.  
 Héron hupé, 74.  
 Héron hupé de Cayenne, 72.  
 Héron hupé de Virginie, 80.  
 Héron hupé du Mexique, 144.  
 Héron huppé de Mahon, 203.  
 Héron, Largest Crested, 80.  
 Héron, Little White, 101, 106, 124, 214.  
 Héron, Lohanjung, 310.  
 Héron, Louisiana, 127, 186.  
 Héron, Malacca, 207.  
 Héron, Mexican, 231.  
 Héron, New Guinea, 137.  
 Héron, New Zealand, 138.  
 Héron, Night, 146, 147.  
 Héron noir, 303.  
 Héron, Pacific, 111.  
 Héron phaeton, 192.  
 Héron, Philippine, 241.  
 Héron, Pondicherry, 307.  
 Héron pourpré, 60.  
 Héron pourpre du Mexique, 231.  
 Héron pourpré hupé, 60.  
 Héron, Purple, 61.  
 Héron, Red-legged, 204.  
 Héron, Red-shouldered, 83.  
 Héron, Rufous, 61.  
 Héron, Sacred, 137.  
 Héron, Snowy, 119.  
 Héron, Spotted, 147, 234.  
 Héron, Squacco, 203, 217.  
 Héron, Squawitta, 203.  
 Héron, Striated, 175.  
 Héron tachelé, 74.  
 Héron, Violet, 294.  
 Héron, White-fronted, 109.  
 Héron, Yellow-crowned, 131.  
 Heronshaw, 74.  
 Heterocercus, 59, 198, 281.  
 Hians, 306.  
 Hiator, 306.  
 hoactli (Ardea), 147.  
 Hocti, 147.  
 hoieri (Alca), 508.  
 holboell (Podiceps), 505, 507, 542.  
 holboellu (Colymbus), 543.  
 holböllui (Podiceps), 542, 543.  
 Honoré de Cayenne, 184.  
 Horned Dabchick, 527, 529.  
 Horned Grebe or Dabchick, 529.  
 Horned Grebe, var A, 528.  
 hringvra (Uria), 375.  
 hudsonius (Ardea), 82, 200.  
 humbloti (Ardea), 66, 70.  
 humboldti (Spheniscus), 625, 648, 650.  
 humboldti Eudiptes), 650.  
 humilirostris (Phalacrocorax), 344.  
 huttoni (Phalacrocorax), 331.  
 Hydranassa, 28, 106, 126.  
 Hydrocorax, 331.  
 Hydroka, 553.  
 hyemalis (Colymbus), 498, 500.  
 hypoleuca (Micrurus), 594.  
 hypoleucos (Carbo), 397.  
 Hypoleucus, 331.  
 hypoleucus (Brachyrhamphus), 594.  
 hypoleucus (Carbo), 395.  
 hypoleucus (Graculus), 393.  
 hypoleucus (Halizus), 398.  
 hypoleucus (Phalacrocorax), 335, 339, 397.  
 Ibis, 2, 4.  
 Ibis, Bald, 17.  
 Ibis, Bay, 30.  
 Ibis, Black, 17.  
 Ibis, Black-faced, 21.  
 Ibis, Black-headed, 7.  
 Ibis blanc, 327.  
 Ibis blanc d'Egypte, 327.  
 Ibis, Cayenne, 25.  
 Ibis, Crested, 27.  
 Ibis, Egyptian, 327.  
 Ibis, Glossy, 30.  
 Ibis, Green, 30.  
 Ibis, Grey, 21.  
 Ibis, Lesser, 41.  
 Ibis, Mexican, 35.  
 Ibis noir, 17.  
 Ibis, Scarlet, 41.  
 Ibis, White, 39.  
 Ibis, White-headed, 324.  
 Ibis, White-necked, 23.  
 Ibis, Wood, 322.  
 ibis (Ardea), 213.  
 ibis (Bubulcus), 215.  
 ibis (Leptoroptus), 214.  
 ibis (Numenius), 4, 6, 327.  
 ibis (Pseudotantalus), 323, 327, 328.  
 ibis (Tantalus), 6, 213, 326, 327.  
 idæ (Ardea), 206, 272.  
 idæ (Ardeola), 202, 206, 207, 282.  
 idæ (Buphus), 206.  
 idæ (Herodias), 282.  
 igneus (Falcinellus), 31, 32, 36, 37.  
 igneus (Ibis), 32.  
 igneus (Numenius), 30.  
 igneus (Tantalus), 30.  
 ignotus (Colymbus), 493.  
 illyricus (Buphus), 204.  
 imber (Cepphus), 498.  
 imber (Colymbus), 496.  
 Imber D. ver, 498.  
 imber (Gavia), 498.  
 imber (Urinator), 498.  
 immaculata (Ardea), 122.

*immaculata* (Garzetta), 123.  
*immaculata* (Herodias), 122.  
*immaculatus* (Herodias), 123.  
*immer* (Colymbus), 496.  
*immer* (Mergus), 498.  
*immer* (Urinator), 498.  
*immigratoria* (Osteorophea), 315, 317.  
*Impennes*, 623.  
*impennis* (Alca), 563.  
*impennis* (Chenalopex), 564.  
*impennis* (Pingouin), 564.  
*impennis* (Pinguinus), 564.  
*impennis* (Plautus), 559, 563, 564.  
*imperator* (Aptenodytes), 626.  
*imperialis* (Phalacrocorax), 385, 390.  
*Indian Grebe*, 513.  
*Indian Jabiru*, 310.  
*indica* (Ardea), 310.  
*indica* (Mycteria), 311.  
*indica* (Xenorhynchus), 311.  
*indicus* (Hians), 307.  
*indicus* (Phaethon), 451, 459.  
*indicus* (Phaethon), 460.  
*indicus* (Tantalus), 324.  
*infusata* (Ibis), 26.  
*infuscatus* (Geronticus), 26.  
*infuscatus* (Phimosus), 26.  
*infuscatus* (Podiceps), 546.  
*infuscatus* (Podicipes), 546.  
*Inocotis*, 2, 12.  
*insignis* (Ardea), 66, 70, 268.  
*intermedia* (Ardea), 85, 87, 88, 99.  
*intermedia* (Egretta), 86.  
*intermedia* (Herodias), 85, 88, 269.  
*intermedia* (Mesophoyx), 85, 269.  
*intermedia* (Platalea), 48, 49.  
*intermedia* (Uria), 574.  
*intermédiaire*. Fou, 426.  
*involucris* (Ardea), 234, 235.

*involucris* (Arletta), 222, 235, 284.  
*involucris* (Botaurus), 235.  
*involucris* (Butorides), 235.  
*islandica* (Alca), 567.  
*Jabiru*, 314.  
*Jabiru*, American, 314.  
*Jabiru de Cayenne*, 314.  
*Jabiru*, Indian, 310.  
*Jabiru*, New Holland, 311.  
*Jabiru*, Senegal, 313.  
*jaburu* (Ciconia), 298.  
*Jack-ass Penguin*, 651.  
*Jamaica Night Heron*, 147.  
*jamaicensis* (Ardea), 131, 147.  
*japonica* (Platalea), 51.  
*Javan Corvorant*, 402.  
*Javan Pelican*, 467.  
*javanica* (Ardea), 177, 178, 181, 184.  
*javanica* (Ardetta), 177, 184.  
*javanica* (Argala), 318.  
*javanica* (Butorides), 172, 174, 177, 181, 182, 183, 184, 250, 278, 279.  
*javanica* (Ciconia), 317.  
*javanica* (Cranopelargus), 318.  
*javanica* (Egretta), 177.  
*javanica* (Herodias), 178.  
*javanica* (Mycteria), 318.  
*javanica* (Carbo), 343.  
*javanicus* (Butorides), 182, 185.  
*javanicus* (Carbo), 402.  
*javanicus* (Graculus), 402.  
*javanicus* (Leptoptilus), 315, 317, 320.  
*javanicus* (Microcarbo), 402.  
*javanicus* (Nycticorax), 182.  
*javanicus* (Oeniscus), 178.  
*javanicus* (Pelecanus), 466.  
*javanicus* (Phalacrocorax), 336, 339, 402, 406.  
*Johanna Heron*, 77.  
*johannæ* (Ardea), 77.  
*jubata* (Egretta), 120.

*jubata* (Herodias), 120.  
*jugularis* (Ardea), 114, 138, 140.  
*jugularis* (Demiegretta), 139.  
*jugularis* (Egretta), 139.  
*jugularis* (Herodias), 139.  
*juninensis* (Podicipes), 505, 506, 538.  
*kalipareus* (Podiceps), 536.  
*kamtschatica* (Alca), 603.  
*kamtschaticus* (Simorhynchus), 604.  
*King Penguin*, 627, 628.  
*kittlitzii* (Brachyrhamphus), 592, 593.  
*kutteri* (Butio), 167.  
*kutteri* (Gorsachius), 167.  
*kwakwa* (Ardea), 147.  
*L'Anhinga*, 419, 420.  
*L'Anhinga de Cayenne*, 420.  
*L'Anhinga du Sénégal*, 412.  
*L'Anhinga noir de Cayenne*, 420.  
*L'Anhinga roux*, 412.  
*L'Ibis blanc*, 327.  
*L'Ibis blanc d'Egypte*, 327.  
*L'Imbrin des Mers du Nord*, 498.  
*La Frégate*, 443.  
*La Grande Frégate de Cayenne*, 443.  
*La Grebe*, 541.  
*La Grebe à oreilles*, 532.  
*La Grebe cornue*, 544.  
*La Grebe de l'Isle S. Thomas*, 553.  
*La Grebe de rivière de la Caroline*, 553.  
*La Grebe de rivière noirâtre*, 507.  
*La Grebe de rivière ou le Castagneux*, 507.  
*La Grebe luppée*, 544.  
*La Petite Frégate*, 443.  
*La Petite Grebe*, 527.  
*La Petite Grebe cornue*, 527.  
*Labrador Auk*, 616.  
*labradora* (Alca), 616.

- labradoria* (*Sagmatorrhina*), 613.  
*labradorica* (*Alca*), 616.  
*lacrymans* (*Uria*), 575.  
*lactea* (*Ardea*), 125.  
*lacteola* (*Uria*), 581.  
*lacteolus* (*Cephus*), 581.  
*lacteolus* (*Ocylambus*), 581.  
*lacteus* (*Pseudotantalus*), 223, 326.  
*lacteus* (*Tantalus*), 326.  
*lacustris* (*Botaurus*), 255.  
*lacustris* (*Phalacrocorax*), 381.  
*lalandii* (*Phalacrocorax*), 351.  
*lamellicollis* (*Ibis*), 11.  
*lamelliger* (*Hiatior*), 309.  
*lamelligerus* (*Anastomus*), 308.  
*lamelligerus* (*Hiatior*), 309.  
*laminigerus* (*Anastomus*), 309.  
*lampridis*, 3, 38.  
*landsbergi* (*Ardea*), 113.  
 Largest Crested Heron, 80.  
 Larva, 615.  
*lathamii* (*Sagmatorrhina*), 613, 614.  
*latifili* (*Herodias*), 92.  
*latrostrum* (*Platalea*), 48.  
 Le Castagneux 507.  
 Le Castagneux à bec cercle, 553.  
 Le Castagneux de Saint Domingue, 520.  
 Le Cormoran, 340.  
 Le Curicaca de Cayenne, 322.  
 Le Fou, 436.  
 Le Fou blanc, 432.  
 Le Fou commun, 436.  
 Le Fou de Bassan, 425.  
 Le Fou de Cayenne, 436.  
 Le Fou tacheté, 425.  
 Le Fou tacheté de Cayenne, 425.  
 Le Gorfou, 635.  
 Le Grand Fou, 425.  
 Le Grand Grebe, 549.  
 Le Grand Manchot, 628.  
 Le Grand Paille en-queue, 457.  
 Le Grand Pingoin, 563.  
 Le Grand Pingouin, 564.  
 Le Grand Plongeon, 196.  
 Le Grand Plongeon tacheté, 496.  
 Le Grebe cornu, 544.  
 Le Grebe de la L. niuane, 553.  
 Le Grebe de rivière de S. Domingue, 520.  
 Le Grebe duc-laart, 553.  
 Le Grebe luppé, 544.  
 Le Guillemot, 573.  
 Le Jougris, 539.  
 Le Lumme ou Petit Plongeon de la Mer du Nord, 489.  
 Le Macareux, 616.  
 Le Macareux de Kamtchatka, 612.  
 Le Manchot, 649.  
 Le Manchot à collier de la Nouvelle Guinée, 624.  
 Le Manchot de la Nouvelle Guinée, 627.  
 Le Manchot des Hottentots, 649.  
 Le Manchot des Isles Malouines, 627.  
 Le Manchot du Cap de Bonne-Espérance, 649.  
 Le Manchot luppé de Sibérie, 635.  
 Le Manchot moyen, 649.  
 Le Manchot Papou, 631.  
 Le Manchot sauteur, 636.  
 Le Manchot tacheté, 649.  
 Le Paille-en-cul, 457.  
 Le Paille-en-cul blanc, 453.  
 Le Paille-en-cul fauve, 455.  
 Le Paille-en-queue à brins rouges, 451.  
 Le Paille-en-queue blanc de l'Isle de l'Ascension, 453.  
 Le Pelican, 462.  
 Le Pelican à bec dentelé, 481.  
 Le Pélican bigarré d'Amérique, 477.  
 Le Pélican brun, 475.  
 Le Pélican brun de l'Isle de Luçon, 466.  
 Le Pélican de Smyrne, 468.  
 Le Pélican des Philippines, 471.  
 Le Pélican rose de l'Isle de Luçon, 466.  
 Le petit Cormoran, 364.  
 Le petit Fou, 436.  
 Le petit Fou brun, 432.  
 Le petit Grebe, 528.  
 Le petit Guillemot, 569.  
 Le petit Guillemot noir, 580.  
 Le petit Guillemot rayé, 580.  
 Le petit Paille-en-queue, 453.  
 Le petit Pingoin, 565.  
 Le petit Pingouin, 566.  
 Le petit Plongeon, 487.  
 Le Pingoin, 565.  
 Le Pingouin, 566.  
 Le Plongeon, 489.  
 Le Plongeon à gorge noir, 492.  
 Le Plongeon à gorge rouge, 487.  
 Le Plongeon tacheté, 496.  
 Le Puffin du Brésil, 378.  
*lefevri* (*Sula*), 428.  
*lentiginosa* (*Ardea*), 259, 263.  
*lentiginosa* (*Botaurus*), 253, 259, 288.  
*lentiginosa* (*Butor*), 261.  
*lepidus* (*Ardea*), 227, 228, 230.  
*Leptorodas*, 114.  
*Leptorodius*, 37, 114.  
*Leptopelicanus*, 460.  
*Leptoptilus*, 292, 315.  
*Lepturus*, 450.  
*lepturus* (*Phaethon*), 450, 453.  
*lepturus* (*Phaeton*), 453, 456.  
 Lesser Booby, 436.  
 Lesser Crested Grebe, 528.  
 Lesser Frigate Pelican, 443.  
 Lesser Gannet, 432.  
 Lesser Guillemot, 573.  
 Lesser Ibis, 41.  
 Lesser Penguin, 649.  
*leuce* (*Ardea*), 96.  
*leuce* (*Egretta*), 96.  
*leuce* (*Herodias*), 96.  
*Leucorodia*, 43.  
*leucorodia* (*Platalea*), 43, 44, 46, 49, 50, 267.  
*Leucibis*, 39.  
*Leucocarbo*, 331.  
*leucocephala* (*Ardea*), 294.

**leucocephala** (Carbo), 343.  
**leucocephala** (Ciconia), 294.  
**leucocephala** (Liplocercus), 295.  
**leucocephala** (Lissocura), 295.  
**leucocephala** (Theristicus), 20.  
**leucocephalus** (Fregata), 444.  
**leucocephalus** (Melanopelargus), 295.  
**leucocephalus** (Pelecanus), 443.  
**leucocephalus** (Pseudotantalus), 323, 324, 326.  
**leucocephalus** (Tantalus), 323, 324.  
**leucogaster** (Ardea), 127.  
**leucogaster** (Carbo), 368, 395.  
**leucogaster** (Dysporus), 440.  
**leucogaster** (Graculus), 395, 396.  
**leucogaster** (Haliaeetus), 348, 368.  
**leucogaster** (Herodias), 127.  
**leucogaster** (Hydrocorax), 388.  
**leucogaster** (Hypoleucus), 396.  
**leucogaster** (Pelecanus), 436.  
**leucogaster** (Phalacrocorax), 396, 398.  
**leucogaster** (Plotus), 420.  
**leucogastra** (Ardea), 128.  
**leucogastra** (Demi-egretta), 128.  
**leucogastra** (Egretta), 127.  
**leucogastra** (Hydranassa), 127.  
**leucogastra** (Sula), 438, 440.  
**leucolopha** (Ardea), 191.  
**leucolopha** (Tigrornis), 191, 281.  
**leucolophum** (Tigrisoma), 191.  
**leucolophus** (Botaurus), 191.  
**leucomelas** (Haliaeetus), 396.

**leucon** (Ibis), 8, 10.  
**leuconota** (Nyctiardea), 157.  
**leuconotus** (Ardea), 157.  
**leuconotus** (Buphus), 157.  
**leuconotus** (Calherodius), 275, 276.  
**leuconotus** (Nycticorax), 146, 157, 276.  
**leuconotus** (Phalacrocorax), 360.  
**leucophæa** (Ardea), 77.  
**leucophæa** (Sula), 426.  
**Leucophoyx**, 58, 124.  
**leucophthalmos** (Uria), 576.  
**leucopodius** (Platea), 45.  
**leucoprymna** (Ardea), 128.  
**leucoprymna** (Demi-egretta), 128.  
**leucoprymna** (Egretta), 127.  
**leucops** (Ardea), 110.  
**leucopsis** (Uria), 575.  
**leucoptera** (Ardea), 204, 206, 207, 208, 211, 212, 272.  
**leucoptera** (Ardeola), 207, 211, 212.  
**leucoptera** (Cancroma), 207.  
**leucoptera** (Oiconia), 311.  
**leucoptera** (Uria), 581.  
**leucopterus** (Podiceps), 549.  
**leucopygius** (Ibis), 42.  
**leucorodia** (Platea), 45.  
**leucorodius** (Platalea), 45.  
**leucotis** (Carbo), 388.  
**leucotis** (Podiceps), 525.  
**leucotis** (Rollandia), 527.  
**leucurus** (Phalacrocorax), 331.  
**levaillanti** (Anhinga), 413.  
**levaillanti** (Plotus), 410, 412, 414.  
**limnicola** (Botaurus), 166.  
**limnicola** (Tigrisoma), 166.  
**limnophilax** (Botaurus), 166.  
**limnophilax** (Nycticorax), 166.  
**limnophylax** (Ardea), 166.

**lindermayeri** (Egretta), 120.  
**lineata** (Ardea), 194, 196.  
**Lineated Bittern**, 194.  
**lineatum** (Tigrisoma), 193, 194, 196, 281.  
**lineatus** (Podilymbus), 554.  
**linnei** (Graculus), 365.  
**Little Auk**, 569.  
**Little Bittern**, 222, 231.  
**Little Brown Bittern**, 222.  
**Little Egret**, 119, 124.  
**Little Grebe**, 507, 511.  
**Little Grebe or Dabchick**, 508.  
**Little Penguin**, 646.  
**Little White Heron**, 101, 106, 124, 214.  
**loculator** (Tantalops), 322.  
**loculator** (Tantalus), 321.  
**Lobanjung Heron**, 310.  
**Lomvia**, 572.  
**lomvia** (Alca), 574.  
**lomvia arra** (Uria), 579.  
**lomvia** (Catarractes), 578.  
**lomvia** (Oepphus), 577.  
**lomvia** (Uria), 572, 574, 577, 579.  
**longicaudata** (Aptenodytes), 633.  
**longicaudus** (Graculus), 407.  
**longicollis** (Ardea), 98.  
**longimembris** (Pseudotantalus), 324.  
**longimembris** (Tantalus), 324, 325.  
**longirostris** (Aptenodytes), 628.  
**longirostris** (Apterodita), 628.  
**longirostris** (Colymbus), 540.  
**longirostris** (Eudocimus), 39.  
**longirostris** (Ibis), 39.  
**longirostris** (Pelecanus), 463, 466.  
**longirostris** (Podiceps), 550.  
**longirostris** (Tantalus), 328.  
**Loon or Great Northern Diver**, 496.  
**Lophasthyia**, 503.



- Lophaitiys*, 502.  
*Lophotibis*, 3, 27.  
*Louisiana Heron*, 127, 186.  
*Louisiane Grebe*, 553.  
*lucida Ardea*, 214.  
*lucidus (Bubulcus)*, 213, 215, 216, 218, 282.  
*lucidus (Graculus)*, 351.  
*lucidus (Halicus)*, 351.  
*lucidus (Halicus)*, 351.  
*lucidus (Herodias)*, 282.  
*lucidus (Phalacrocorax)*, 332, 336, 351.  
*ludoviciana (Ardea)*, 127, 186.  
*ludoviciana (Demi-egretta)*, 127.  
*ludoviciana (Egretta)*, 127.  
*ludoviciana (Herodias)*, 127.  
*ludoviciana (Hydranassa)*, 127, 128.  
*ludoviciana (Colymbus)*, 553.  
*ludoviciana (Podiceps)*, 554.  
*lugubris (Graculus)*, 351.  
*lugubris (Phalacrocorax)*, 351.  
*lumme (Colymbus)*, 487.  
*lumme (Gavia)*, 489.  
*lumme (Limosa)*, 489.  
*Lunda*, 62, 611.  
*luteus (Bubulcus)*, 204.  
*luzoniensis (Platalea)*, 50.  
  
**Macaroux**, Le, 616.  
*Macaroni Penguin*, 641.  
*macet (Ibis)*, 8.  
*macronata (Egretta)*, 207, 210.  
*macrorhyncha (Ardea)*, 181, 183, 184.  
*macrorhyncha (Ardea)*, 183.  
*macrorhyncha (Butorides)*, 183, 184.  
*macrorhynchus (Carbo)*, 351.  
*macrorhynchus (Colymbus)*, 493.  
*macrorhynchus (Butorides)*, 181.  
*maculata (Ardea)*, 147, 158, 234.  
*maculata (Ardea)*, 235.  
*maculata (Cancroma)*, 186.  
*maculata (Sula)*, 425.  
*maculatus (Botaurus)*, 235.  
*maculatus (Pelecanus)*, 425.  
*madagascariensis (Anas-tonus)*, 309.  
*Magellanic Shag*, 388.  
*magellanica (Aptenodytes)*, 651.  
*magellanica (Aptenodytes)*, 651.  
*magellanica (Eudiptes)*, 652.  
*magellanica (Pinguinaria)*, 651.  
*magellanicus (Carbo)*, 359.  
*magellanicus (Graculus)*, 378, 388.  
*magellanicus (Hydrocorax)*, 388.  
*magellanicus (Pelecanus)*, 388.  
*magellanicus (Phalacrocorax)*, 333, 338, 387, 388.  
*magellanicus (Spheniscus)*, 649, 651.  
*magellanicus (Urile)*, 388.  
*magifica (Ardea)*, 92.  
*magistrostris (Aptenodytes)*, 652.  
*Maguari*, 297.  
*maguari (Ardea)*, 73, 297.  
*maguari (Ciconia)*, 297.  
*maguari (Euxenura)*, 297, 298.  
*Maigüé*, 378.  
*Maigüé Brasiliensium Pisoni*, 378.  
*major (Echmophorus)*, 502, 549, 550, 657.  
*major (Alca)*, 564.  
*major (Ardea)*, 73, 77, 90.  
*major (Ciconia)*, 301.  
*major (Colymbus)*, 549.  
*major (Pelecanus)*, 344.  
*major (Phalacrocorax)*, 344.  
*major (Platalea)*, 45, 46, 51.  
*major (Plegadornis)*, 32.  
*major (Podiceps)*, 550.  
*major (Sula)*, 425.  
*Malacca Heron*, 207.  
*malaccensis (Ardea)*, 206, 207.  
*malaccensis (Ardea)*, 207.  
*malaccensis (Buphus)*, 207.  
*malaciensis (Ardea)*, 207.  
*Man of War Bird*, 443.  
*Manhot, Le*, 649.  
*mandibularis (Nycticorax)*, 146, 161, 276.  
*mandti (Cephus)*, 585.  
*mandti (Uria)*, 572, 582, 584.  
*mandti (Cephus)*, 582.  
*mandti (Grylle)*, 585.  
*mandti (Uria)*, 584.  
*Manduria ó curucá*, 21.  
*Manilla Pelican*, 466.  
*manillensis (Ardea)*, 64.  
*manillensis (Callierodius)*, 182.  
*manillensis (Nycticorax)*, 159, 161, 162.  
*manilleus (Nycticorax)*, 146, 159, 161, 162, 163, 276, 277.  
*manillensis (Pelecanus)*, 466, 472.  
*manillensis (Phox)*, 60, 63, 64, 267.  
*manesfeld, (Alca)*, 582.  
*marabou (Ciconia)*, 315, 319.  
*marabou (Leptoptilos)*, 315.  
*Marbled Guillemot*, 550.  
*marmorata (Anobapton)*, 591.  
*marmorata (Ardea)*, 195, 196.  
*marmorata (Uria)*, 590.  
*marmoratum (Tigrisoma)*, 193, 195, 196, 281.  
*marmoratus (Brachyrhamphus)*, 590.  
*marmoratus (Brachyrhamphus)*, 559, 590, 592, 594.  
*marmoratus (Brachyrhamphus)*, 592.  
*marmoratus (Colymbus)*, 590.  
*maragh (Ardea)*, 203.  
*matook (Ardea)*, 133.  
*matook (Herodias)*, 138.  
*maximus (Colymbus)*, 498.  
*medius (Phalacrocorax)*, 343, 344.

**Megadyptes**, 625, 644.  
**megalophus** (*Pelecanus*), 467.  
**megarhynchus** (*Colymbus*), 493.  
**Megerodius**, 66.  
**meisneri** (*Cephus*), 584.  
**meisneri** (*Uria*), 584.  
**melana** (*Ardeiralla*), 251.  
**melana** (*Ardetta*), 251.  
**melalophos** (*Ardea*), 166.  
**Melanocarbo**, 331.  
**melanocephala** (*Ardea*), 66, 70, 169, 268.  
**melanocephala** (*Ibis*), 4, 5, 6, 7.  
**melanocephalus** (*Geronticus*), 8, 10.  
**melanocephalus** (*Tantalus*), 7.  
**melanocephalus** (*Threskiornis*), 8.  
**melanogaster** (*Anhinga*), 415.  
**melanogaster** (*Carbo*), 351.  
**melanogaster** (*Phalacrocorax*), 351.  
**melanogaster** (*Plotus*), 410, 411, 412, 414, 418, 420.  
**melanognathos** (*Carbo*), 402.  
**melanognathus** (*Graculus*), 403.  
**melanognathus** (*Microcarbo*), 402.  
**melanognathus** (*Phalacrocorax*), 403.  
**melanoleucos** (*Mergulus*), 569.  
**melanoleucus** (*Carbo*), 398.  
**melanoleucus** (*Graculus*), 398, 399, 400.  
**melanoleucus** (*Haliaetus*), 398.  
**melanoleucus** (*Hydrocorax*), 398.  
**melanoleucus** (*Microcarbo*), 398.  
**melanoleucus** (*Phalacrocorax*), 336, 339, 398, 401.  
**melanolopha** (*Ardea*), 166.  
**melanolopha** (*Tigrisoma*), 166.  
**melanolophus** (*Botaurus*), 167.

**melanolophus** (*Gornichius*), 166, 167, 169, 277.  
**melanolophus** (*Nycticorax*), 167, 169.  
**Melanopelargus**, 298.  
**melanophis** (*Ardea*), 228.  
**Melanophoyx**, 57, 104.  
**melanopes** (*Theristicus*), 22.  
**melanopis** (*Geronticus*), 22.  
**melanopis** (*Ibis*), 21.  
**melanopis** (*Tantalus*), 21.  
**melanopis** (*Theristicus*), 21, 23, 265.  
**melanops** (*Sula*), 431.  
**melanops** (*Tantalus*), 22.  
**melanops** (*Theristicus*), 22.  
**melanoptera** (*Ardea*), 228.  
**melanopus** (*Ardea*), 85, 123.  
**melanopus** (*Egretta*), 86, 123.  
**melanopus** (*Herodias*), 88, 123.  
**melanorhyncha** (*Ardea*), 92.  
**melanorhyncha** (*Egretta*), 92.  
**melanorhyncha** (*Platalea*), 48.  
**melanorhynchos** (*Ardea*), 91.  
**melanorhynchos** (*Spathorodia*), 48.  
**melanorhynchus** (*Phaëton*), 452.  
**melanorhyncos** (*Phaëton*), 452.  
**melanotis** (*Ardea*), 228.  
**melanotus** (*Botaurus*), 258.  
**melanura** (*Sula*), 426, 428.  
**melanurus** (*Carbo*), 399.  
**melas** (*Dupetor*), 246, 251.  
**melas** (*Xanthocnus*), 251.  
**mendiculus** (*Spheniscus*), 649, 653.  
**mentalis** (*Phalacrocorax*), 388.  
**Mergulus**, 569.  
**Mergus**, 486.  
**meridionalis** (*Nycticorax*), 147.

**Mesophoyx**, 57, 85.  
**Metacopectera**, 562.  
**Mexican Heron**, 231.  
**Mexican Ibis**, 35.  
**mexicana** (*Ibis*), 35.  
**mexicana** (*Plataea*), 53.  
**mexicanus** (*Carbo*), 381.  
**mexicanus dentatus** (*Onocrotalus*), 481.  
**mexicanus** (*Graculus*), 381.  
**mexicanus non-dentatus** (*Onocrotalus*), 481.  
**mexicanus** (*Tantalus*), 31, 35.  
**mexicanus** (*Phalacrocorax*), 334, 338, 378, 381.  
**micra** (*Rollandia*), 525.  
**Microcarbo**, 331.  
**microceros** (*Ciceronia*), 606.  
**microceros** (*Phaleris*), 605.  
**microceros** (*Simorhynchus*), 605.  
**Microcnus**, 241.  
**Microdyptes**, 635.  
**micropterum** (*Centropelma*), 538.  
**micropterus** (*Podiceps*), 538.  
**micropterus** (*Podicipes*), 505, 506, 538.  
**microrhynchos** (*Alca*), 567.  
**microrhynchus** (*Colymbus*), 489.  
**microscelis** (*Ciconia*), 295.  
**Micruria**, 561, 494.  
**migratoria** (*Argala*), 315.  
**minahassæ** (*Nycticorax*), 146, 163, 276, 277.  
**minor** (*Aptenodytes*), 646.  
**minor** (*Aptenodytes*), 646.  
**minor** (*Ardea*), 77, 259.  
**minor** (*Attagen*), 448.  
**minor**  $\beta$  (*Colymbus*), 511.  
**minor** (*Botaurus*), 260, 261.  
**minor** (*Cephus*), 570.  
**minor** (*Ohrysocoma*), 646.  
**minor** (*Colymbus*), 507, 513, 573.  
**minor** (*Eudiptes*), 646.  
**minor** (*Eudiptila*), 646.  
**minor** (*Eudiptula*), 646, 646.

- minor (*Fregata*), 445, 446.  
 minor (*Pelecanus*), 443, 467.  
 minor (*Platalea*), 48, 49, 50.  
 minor (*Plegadornis*), 32.  
 minor (*Podiceps*), 507, 512, 513, 514, 517, 519, 556.  
 minor (*Podiceps*), 502.  
 minor (*Spheniscus*), 646.  
 minor (*Sylboecylus*), 508.  
 minor (*Tachybaptus*), 514.  
 minor (*Tachypetes*), 444, 447.  
 minor (*Uria*), 570, 574.  
 minor, var.  $\beta$  (*Podiceps*), 511.  
 minor, var. *pandubia* (*Podiceps*), 513.  
 minor, var. *pelzelni* (*Podiceps*), 518.  
 minor, var. *tricolor* (*Podiceps*), 517.  
 minuta (*Ardea*), 222, 225, 283.  
 minuta (*Ardeola*), 223, 226.  
 minuta (*Ardetta*), 221, 222, 223, 226, 235, 281.  
 minuta (*Crocodylus*), 223.  
 Minute Auk, 605.  
 Minute Bittern, 231.  
 minutus (*Botaurus*), 222, 226.  
 minutus (*Butor*), 223.  
 minutus (*Colymbus*), 508.  
 minutus (*Podiceps*), 507.  
 minutus (*Tantalus*), 41.  
 mitratus (*Pelecanus*), 467.  
 modesta (*Ardea*), 99.  
 modesta (*Egretta*), 92, 99.  
 modesta (*Herodias*), 92, 95.  
 mokoho (*Ardea*), 259.  
 molle (*Aptenodytes*), 625.  
 mollus (*Pelecanus*), 480.  
 mollusca (*Ibis*), 4, 9.  
 Molybdophanes, 3, 24.  
 monacata (*Alca*), 619.  
 monacata (*Ceratorhina*), 610.  
 monacata (*Cerorhina*), 610.  
 monacata (*Cerorhina*), 610.  
 monacata (*Cerorhina*), 610.  
 monacata (*Cerorhina*), 610.  
 monacata (*Chimera*), 610.  
 monacata (*Fratercula*), 610.  
 monacatus (*Simorhynchus*), 610.  
 monticola (*Ardea*), 62.  
 Moria, 423.  
 Mormon, 615.  
 Morus, 423.  
 motzfeldi (*Oxyphaps*), 582.  
 motzfeldi (*Uria*), 582.  
 mucrocerus (*Oicoceros*), 606.  
 mugitans (*Botaurus*), 261.  
 Mycteria, 292, 314.  
 mycteria (*Ciconia*), 314.  
 mycteriorhyncha (*Oicoceros*), 301.  
 mycteriorhyncha (*Oicoceros*), 301.  
 mystacalis (*Carbo*), 378.  
 mystacalis (*Carbo*), 378.  
 mystacea (*Uria*) 603.  
 Mystrorhamphus, 52.  
 naevia (*Ardea*), 147.  
 naevia (*Nyctardea*), 150.  
 naevia (*Mergus*), 489.  
 naevius (*Colymbus*), 540.  
 naevius (*Graculus*), 355.  
 naevius (*Nyctacorax*), 149, 150, 151, 156, 275.  
 navis (*Pelecanus*), 455.  
 nandapoa (*Ibis*), 322.  
 Nannocetus, 59, 242.  
 nanus (*Xenorhynchus*), 310.  
 neborax (*Sula*), 424, 435.  
 nebulosa (*Ardea*), 236, 240.  
 neglectus (*Phalacrocorax*), 333, 337, 374.  
 neoxena (*Ardetta*), 221, 231, 284.  
 neoxenus (*Botaurus*), 284.  
 neoxenus (*Botaurus*), 233.  
 nesophilus (*Ardeallus*), 251.  
 nesophilus (*Dupetor*), 246, 250, 251.  
 nesophilus (*Xanthocetus*), 251.  
 nestor (*Podiceps*), 522.  
 New Guinea Heron, 137.  
 New Holland Dartar, 418.  
 New Holland Grebe, 519.  
 New Holland Jabiru, 311.  
 New Holland Pelican, 483.  
 New Holland Penguin, 625.  
 New Holland Shag, 343.  
 New Holland Tropic Bird, 452.  
 New Zealand Heron, 138.  
 New Castle Diver, 489.  
 Neuteles, 553.  
 nepes (*Carbo*), 406.  
 niger (*Hydrocorax*), 402.  
 niger (*Melanocorax*), 403.  
 niger (*Melanopelargus*), 305.  
 niger (*Pelecanus*), 402.  
 niger (*Phalacrocorax*), 378.  
 niger (*Tantalus*), 17.  
 nigerrima (*Ardea*), 138.  
 nigerrima (*Egretta*), 138.  
 Night Heron, 143, 147, 149.  
 Night Heron, American, 147.  
 Night Heron, Caledonian, 158.  
 Night Heron, Cayenne, 131.  
 Night Heron, Jamaica, 147.  
 Night Raven, 146.  
 nigra (*Ardea*), 247, 303.  
 nigra (*Ciconia*), 299, 303.  
 nigra (*Demigretta*), 140.  
 nigricans (*Alca*), 569.  
 nigricans (*Colymbus*), 528.  
 nigricans (*Podiceps*), 508, 528.  
 nigricollis (*Ardea*), 174.  
 nigricollis (*Butorides*), 174.  
 nigricollis (*Colymbus*), 533, 535.  
 nigricollis californicus (*Colymbus*), 535.

**nigricollis** (Dytes), 533.  
**nigricollis californicus** (Dytes), 535.  
**nigricollis** (Podiceps), 533, 657.  
**nigricollis** (Podiceps), 504, 506, 532, 533, 657.  
**nigricollis** (Proctopus), 533.  
**nigripes** (Ardea), 122.  
**nigripes** (Egretta), 273.  
**nigripes** (Garzetta), 118, 123, 273.  
**nigripes** (Herodias), 123.  
**nigrirostris** (Ardea), 85.  
**nigrirostris** (Egretta), 86, 91, 120.  
**nigriventris** (Eudypes), 637.  
**nigrivestis** (Eudypes), 636.  
**nigrodactyla** (Sula), 430.  
**nippon** (Geronticus), 15.  
**nippon** (Ibis), 15.  
**nippon** (Nipponia), 15, 285.  
**Nipponia**, 2, 15.  
**nivea** (Ardea), 85, 119, 123, 124, 272.  
**nivea** (Ciconia), 301.  
**nivea** (Egretta), 102.  
**nivea** (Garzetta), 120.  
**nivea** (Platalea), 45, 49.  
**nivea** (Uria), 581.  
**nobilis** (Ardea), 67, 70.  
**nobilis** (Ardeomega), 69.  
**nobilis** (Megalerodias), 67.  
**noctivagus** (Podiceps), 511.  
**nodirostris** (Oicersonia), 605.  
**nodirostris** (Phaleris), 605.  
**Northern Diver**, 498.  
**Northern Penguin**, 563.  
**norwegica** (Uria), 574.  
**Notophox**, 57, 109, 271.  
**novæ-guinæ** (Ardea), 138, 140.  
**novæ-guinæ** (Herodias), 139.  
**novæ-hollandiæ** (Anhinga), 418.  
**novæ-hollandiæ** (Ardea), 109, 138, 158.  
**novæ-hollandiæ** (Demi-egretta), 110.  
**novæ-hollandiæ** (Egretta), 110.

**novæ-hollandiæ** (Graculus), 344.  
**novæ-hollandiæ** (Herodias), 110.  
**novæ-hollandiæ** (Notophox), 109, 271.  
**novæ-hollandiæ** (Phæton), 452.  
**novæ-hollandiæ** (Phalacrocorax), 343.  
**novæ-hollandiæ** (Plotus), 411, 415, 417.  
**novæ-hollandiæ** (Podiceps), 519.  
**novæ-hollandiæ** (Podiceps), 504, 505, 518.  
**novæ-hollandiæ** (Spheniscus), 625.  
**novæ-zelandiæ** (Ardeola), 235.  
**nudifrons** (Ciconia), 315, 317.  
**nudifrons** (Harpiprion), 26.  
**nudifrons** (Ibis), 26.  
**nudifrons** (Leptoptilus), 318.  
**nudifrons** (Leucorodia), 50.  
**nudifrons** (Platalea), 50.  
**nudigula** (Carbo), 344, 402.  
**Nyctanassa**, 58, 130.  
**Nycterodius**, 145.  
**nycthemerus** (Phalacrocorax), 387.  
**Nyctherodius**, 130.  
**Nyctiardea**, 145.  
**Nycticorax**, 58, 145, 275.  
**nycticorax** (Ardea), 146, 155, 156.  
**nycticorax** (Nycterodius), 149.  
**nycticorax** (Nyctiardea), 150.  
**nycticorax** (Nycticorax), 145, 146, 149, 151, 155, 156, 275.  
**nycticorax** (Scotæus), 150.  
**obscura** (Ardea), 156.  
**obscura** (Nyctiardea), 156.  
**obscurus** (Colymbus), 528.  
**obscurus** (Nycticorax), 155, 156.  
**obscurus** (Podiceps), 528.  
**occidentalis** (Æchmophorus), 549, 551.

**occidentalis** (Ardea), 66, 80, 84.  
**occidentalis** (Audubonia), 84.  
**occidentalis** (Ceratorhyncha), 609.  
**occidentalis** (Cerorhina), 610.  
**occidentalis** (Cerorhina), 605.  
**occidentalis** (Cerorhyncha), 609.  
**occidentalis clarkii** (Æchmophorus), 551.  
**occidentalis clarkii** (Podiceps), 551.  
**occidentalis** (Herodias), 84.  
**occidentalis** (Podiceps), 543, 551.  
**occidentalis** (Uria), 609.  
**occipitalis** (Podiceps), 537.  
**occipitalis** (Pelecanus), 482.  
**ochracea** (Bostrychia), 38.  
**Ocniscus**, 172.  
**ocularia** (Ardea), 157.  
**ohula** (Ardea), 101.  
**olivacea** (Omatibis), 38.  
**olivacea** (Hagedashia), 38.  
**olivacea** (Ibis), 38, 266.  
**olivacea** (Lampribus), 38, 266.  
**olivaceus** (Geronticus), 38.  
**olivaceus** (Plegadis), 266.  
**olivaceus** (Theristicus), 38.  
**Ombrette**, 288.  
**Ombrette du Sénégal**, 288.  
**Ombria**, 607.  
**Onocrotalus**, 460, 462.  
**onocrotalus occidentalis** (Pelecanus), 475.  
**onocrotalus orientalis** (Pelecanus), 462.  
**onocrotalus** (Pelecanus), 460, 461, 462, 464, 465, 467, 468, 475, 481.  
**onocrotalus**, var. **minor** (Pelecanus), 467.  
**onocrotalus**, var. **sharpai** (Pelecanus), 462.  
**Onoré**, 194.  
**Onoré rayé**, 194.  
**Onoré rayé de Cayenne**, 194.

- onslowi (Phalacrocorax), 334, 338, 385.  
 ordi (Fulicellus), 32, 35, 36, 37.  
 ordi (Ibis), 31, 32, 35, 36, 37.  
 orientalis (Ardea), 119.  
 orientalis (Ceryle), 609.  
 orientalis (Ciconia), 301.  
 orientalis (Egretta), 91.  
 orientalis (Gallinula), 120.  
 orientalis (Herodias), 120.  
 orientalis (Nycticorax), 147.  
 orientalis (Pelecanus), 469.  
 occidentalis (Anas), 306, 307.  
 occidentalis (Ardea), 306.  
 Osteorhynchus, 315.  
 Oxyechus, 503.  
 oxyechus (Ceryle), 28.  
 oxyechus (Geronticus), 28.  
 oxyechus (Ibis), 28.  
 pachyrhynchus (Osteorhynchus), 315.  
 pachyrhynchus (Cathartes), 625, 635, 636, 640.  
 pachyrhynchus (Eudiptes), 638, 640.  
 Pacific Heron, 111.  
 pacificus (Ardea), 111.  
 pacificus (Ceryle), 495.  
 pacificus (Notophox), 109, 111, 271.  
 pacificus (Colymbus), 486, 494, 495.  
 pacificus (Columba), 495.  
 pacificus (Larus), 495.  
 Pacific-queue de Cayenne, 437.  
 Pacific-queue de l'Isle de France, 451.  
 palliata (Ardea), 73.  
 pallidus (Podiceps), 508.  
 Palmerston Frigate Pelican, 443.  
 palmerstoni (Fregata), 444.  
 palmerstoni (Pelecanus), 443.  
 palmerstoni (Tachypetes), 445, 448.  
 palpebrata (Aptenodytes), 640.  
 palpebrata (Eudiptes), 640.  
 palpebratus (Spheniscus), 640.  
 papillata (Ibis), 12.  
 papillosa (Ibis), 12.  
 papillosa (Inocotia), 12.  
 papillosa (Pseudibis), 12.  
 papillosa (Inocotia), 2, 12, 284.  
 papillosus (Geronticus), 12, 14.  
 papua (Aptenodytes), 631.  
 papua (Aptenodytes), 631.  
 papua (Chrysocoma), 631.  
 papua (Eudiptes), 631.  
 papua (Pygoscelis), 631.  
 papua (Spheniscus), 631.  
 papua (Aptenodytes), 631.  
 Papuan Penguin, 631.  
 papuania (Pygoscelis), 631.  
 Parnopio, 19.  
 parotis (Colymbus), 540.  
 parva (Sula), 436.  
 parvus (Dysornis), 438.  
 parvus (Pelecanus), 436.  
 parvus (Morus), 436.  
 patagonica (Aptenodytes), 626, 628.  
 patagonica (Pinguinaria), 628.  
 patagius (Pelecanus), 469.  
 patagius (Podiceps), 546.  
 Patagonian Penguin, 628.  
 patagonica (Aptenodytes), 626, 626, 627, 628.  
 patagonica (Pinguinaria), 628.  
 patagonicus (Spheniscus), 626.  
 patruelis (Ardea), 183.  
 patruelis (Butorides), 183.  
 patruelis (Oeniscus), 184.  
 pauper (Nyctanassa), 130, 134, 274.  
 pauper (Nycticorax), 134.  
 payson (Ardea), 225.  
 pealei (Ardea), 107, 108, 271.  
 pealei (Demigretta), 107.  
 pealei (Egretta), 107.  
 pealei (Herodias), 107.  
 Pelecanthya, 503.  
 Pelecanthya, 502.  
 pelagicus (Phalacrocorax), 333, 337, 360, 363.  
 pelagicus albobellatus (Phalacrocorax), 373.  
 pelagicus resplendens (Phalacrocorax), 361.  
 pelagicus robustus (Phalacrocorax), 361.  
 Pelican, 469.  
 Pelican, 462, 462.  
 Pelican bigarré d'Amérique, 477.  
 Pelican, Black-bellied, 477.  
 Pelican, Brown, 476, 479.  
 Pelican brun, 475.  
 Pelican brun d'Amérique, 475.  
 Pelican, Charles Town, 476.  
 Pelican, Dalmatian, 468.  
 Pelican, Duck, 476.  
 Pelican, Frigate, 443.  
 Pelican, Javan, 467.  
 Pelican, Manila, 466.  
 Pelican, New Holland, 463.  
 Pelican of America, 475.  
 Pelican, Philippine, 471.  
 Pelican, Red-backed, 474.  
 Pelican, Rose-coloured, 466.  
 Pelican, Rough billed, 482.  
 Pelican, Saw billed, 480.  
 Pelican, White, 482.  
 Pelican Wood, 521.  
 pelzneri (Podiceps), 518.  
 pelzneri (Podiceps), 504, 505, 518.  
 Penguin, The, 635.  
 Penguin, Black-footed, 649.  
 Penguin, Crested, 636.  
 Penguin, Emperor, 627, 628.  
 Penguin Gentoo, 631.  
 Penguin, Jack-ass, 651.  
 Penguin, King, 627, 628.  
 Penguin, Lesser, 649.  
 Penguin, Macrom, 641.  
 Penguin, Northern, 563.  
 Penguin, Patagonian, 628.  
 Penguin, Stonerucker, 636.  
 penicillatus (Carbo), 363.  
 penicillatus (Graculus), 363, 389.  
 penicillatus (Phalacrocorax), 333, 337, 363.

- penicillatus (Urle), 363.  
 pennantii (Aptenodytes), 628.  
 pennantii (Spheniscus), 628.  
 perdix (Brachyrhamphus), 590, 592.  
 perdix (Cepphus), 592.  
 peregrina (Falcinellus), 32.  
 peregrina (Ibis), 32.  
 peregrinus (Plegadis), 32.  
 Perroquet Auk, 607.  
 personata (Sula), 430.  
 perspicillatus (Graculus), 357.  
 perspicillatus (Phalacrocorax), 333, 337, 357.  
 Petit Butor, 202.  
 Petit Butor de Cayenne, 241.  
 Petit Butor du Sénégal, 203.  
 Petit Cormoran, 364.  
 Petit Courly d'Amérique, 21.  
 Petit Crabier, 241.  
 Petit Fou brun, 432.  
 Petit Frégate, 443.  
 Petit Heron aux ailes noires, 227.  
 Petit Héron blanc, 213.  
 Petit Heron roux du Sénégal, 203.  
 Petrel, Brésilien, 378.  
 phaeospilus (Pelecanus), 474.  
 Phaethon, 450.  
 phaethon (Botaurus), 192.  
 Phaethontidae, 329, 450.  
 Phaeton, 460.  
 Phalacrocoracidae, 329, 330.  
 Phalacrocoracinae, 330.  
 Phalacrocorax, 330, 331.  
 phalacrocorax (Carbo), 344.  
 phalacrocorax continentalis (Carbo), 344.  
 Phalaris, 561, 607.  
 pharaonius (Ardea), 62.  
 philippensis (Ardea), 166, 241.  
 philippensis (Botaurus), 166.  
 philippensis (Colymbus), 511.  
 philippensis (Pelecanus), 461, 471, 473, 475.  
 philippensis (Podiceps), 508, 511, 514, 556.  
 philippensis (Podiceps), 508, 509, 511.  
 philippensis, var. rufescens (Pelecanus), 475.  
 philippinensis (Tachybaptus), 512.  
 Philippine Heron, 241.  
 Philippine Pelican, 471.  
 philippinus (Colymbus), 511.  
 philippinus (Pelecanus), 471.  
 Phiuosus, 3, 26.  
 Phoenicurus, 450.  
 phoenicurus (Phaeton), 452.  
 phoenix (Onocrotalus), 463.  
 Phoyx, 56, 60.  
 pica (Alca), 566.  
 pica (Pelecanus), 366.  
 pica (Pinguin), 566.  
 pica (Pinguinus), 566.  
 pica (Utamania), 566.  
 picata (Ardea), 112, 247.  
 picata (Herodias), 112.  
 picata (Notophoyx), 109, 112, 113, 114, 271.  
 picta (Agama), 113, 135.  
 picta (Ardea), 274.  
 Pied Shag, 304.  
 Pigmy Auk, 603.  
 pileata (Ardea), 171.  
 pileata (Herodias), 171.  
 pileata (Nycticorax), 171.  
 pileata (Nycticorax), 171.  
 pileatus (Pterodius), 171, 277.  
 pileatus (Ptilherodius), 171.  
 Pilerodius, 171.  
 Ptilherodius, 58, 171.  
 pillus (Ciconia), 296.  
 pillus (Tantalus), 297.  
 Pinguin, 561.  
 Pinguin, Cape, 649.  
 Pinguin, Collared, 624.  
 Pinguin, Harry, 628.  
 Pinguin, Little, 646.  
 Pinguin, Magellanic, 651.  
 Pinguin, New Holland, 625.  
 Pinguin, Papuan, 631.  
 Pinguin, Patagonian, 629.  
 Pinguin, Red-footed, 635.  
 Pinguin, Three-toed, 624.  
 Pinguin, Woolly, 628.  
 Pinguinaria, 624.  
 Pinguinus, 562.  
 pinuata (Ardea), 262.  
 pinuatus (Botaurus), 253, 262.  
 piscator (Dysporus), 432.  
 piscator (Moris), 432.  
 piscator (Pelecanus), 433.  
 piscator (Sula), 424, 432, 437, 655.  
 Piscatrix, 423.  
 piscatrix (Sula), 431, 432.  
 Platalea, 43.  
 Platan, 43.  
 Platibus, 43, 51.  
 platirhingos (Aptenodytes), 624.  
 P'aucus, 423.  
 Pautus, 560, 562.  
 Plegadis, 3, 29.  
 Plegadornis, 29.  
 Plotina, 330, 410.  
 Plotus, 410.  
 Plotus, 330, 410.  
 plotus (Pelecanus), 437.  
 plumbea (Ardea), 73, 101, 185.  
 plumbea (Egretta), 244.  
 plumbea (Ibis), 24.  
 plumbeus (Butorides), 185, 280.  
 plumbeus (Harpiprion), 24.  
 plumicollis (Tantalus), 322.  
 plumifera (Ardea), 87.  
 plumifera (Egretta), 87.  
 plumifera (Mesophoyx), 85, 87, 270.  
 plumiferus (Herodias), 87.  
 plumigula (Sula), 428.  
 Podiceps, 502.  
 podiceps (Ardea), 235, 226.  
 podiceps (Ardeola), 225.  
 podiceps (Ardetta), 221, 225.  
 podiceps (Colymbus), 553.  
 Podicipedidae, 465, 502.  
 Podiceps, 502.  
 podiceps (Ardetta), 226, 263.  
 podiceps (Podilymbus), 555, 657.  
 Podilymbus, 502, 553.  
 poecilopterus (Botaurus), 258.  
 poeciloptila (Ardea), 258.

- pacilloptilus* (*Botaurus*), 253, 256, 258, 255.  
*poiceoptera* (*Ardea*), 258.  
*poiciloptilus* (*Botaurus*), 258.  
*polaris* (*Morion*), 617.  
*polaris* (*Uria*), 578.  
*Poiocephalus*, 503.  
*poliocephalus* (*Podiceps*), 522.  
*poliocephalus* (*Podiceps*), 504, 505, 522.  
*pondichianus* (*Anas*), 307.  
*Pondicherry Heron*, 307.  
*Pouaere de Cayenne*, 147.  
*Pouaere ou Bator tacheté*, 147.  
*poucheti* (*Herodias*), 102.  
*prætermissa* (*Erythrophox*), 252, 253.  
*prætermisus* (*Arde-rallus*), 253.  
*prasinoscelis* (*Ardea*), 211.  
*prasinoscelis* (*Ardeola*), 211, 282.  
*prasinoscelis* (*Nycticorax*), 211.  
*Procellaria brasiliensis*, 378.  
*procellaria* (*Herodias*), 272.  
*Proctopus*, 582.  
*propinqua* (*Ibis*), 8.  
*prussienæru* (*Ciconia*), 205.  
*Psalibis*, 12.  
*pseudoralloides* (*Buphus*), 211.  
*Pseudotantalus*, 321, 323.  
*psittacula* (*Alca*), 607.  
*psittacula* (*Fratercula*), 608.  
*psittacula* (*Lunula*), 607.  
*psittacula* (*Ombria*), 608.  
*psittacula* (*Phaleris*), 607.  
*psittaculus* (*Cyclorhynchus*), 608.  
*psittaculus* (*Phaleris*), 607.  
*psittaculus* (*Simorhynchus*), 607.  
*Ptychorhamphus*, 561, 589.  
*Puffin*, 616.  
*Puffin Auk*, 616.  
*Puffin, Common*, 617.  
*pulchra* (*Ardetta*), 228, 230.  
*pumila* (*Ardea*), 203.  
*pumilio* (*Phalacrocorax*), 406.  
*pumilus* (*Botaurus*), 241.  
*pumilus* (*Zebrilus*), 241.  
*punctata* (*Ardetta*), 235.  
*punctatus* (*Graculus*), 355.  
*punctatus* (*Pelecanus*), 354.  
*punctatus* (*Phalacrocorax*), 334, 336, 354, 358, 370.  
*punctatus* (*Stictocorbo*), 355.  
*Purple Heron*, 61.  
*purpuragula* (*Carbo*), 378.  
*purpuragula* (*Phalacrocorax*), 377.  
*purpurascens* (*Ardea*), 62.  
*purpurascens* (*Carbo*), 384.  
*purpurascens* (*Urile*), 392.  
*purpurata* (*Ardea*), 62.  
*purpurea* (*Ardea*), 60, 63, 64, 267.  
*purpurea* (*Phox*), 60, 62, 64, 267.  
*pusilla* (*Ardea*), 224, 231.  
*pusilla* (*Ardeola*), 223, 235, 245.  
*pusilla* (*Ardetta*), 226, 235.  
*pusilla* (*Ciconia*), 606.  
*pusilla* (*Fratercula*), 606.  
*pusilla* (*Phaleris*), 605.  
*pusilla* (*Uria*), 605.  
*pusillus* (*Botaurus*), 223, 226.  
*pusillus* (*Simorhynchus*), 601.  
*putea* (*Ardea*), 85.  
*pygmaea* (*Alca*), 603.  
*pygmaea* (*Fratercula*), 604.  
*pygmaea* (*Phaleris*), 605.  
*pygmaeus* (*algeriensis* (*Graculus*), 406.  
*pygmaeus* (*Carbo*), 402.  
*pygmaeus* (*Graculus*), 402, 406.  
*pygmaeus* (*Halæetus*), 406.  
*pygmaeus* (*Halieus*), 406.  
*pygmaeus* (*Hydrocorax*), 406.  
*pygmaeus indicus* (*Graculus*), 402.  
*pygmaeus* (*Microcorbo*), 403, 408.  
*pygmaeus* (*Pelecanus*), 405, 467.  
*pygmaeus* (*Phalacrocorax*), 330, 336, 339, 402, 405, 409.  
*pygmaeus* (*Podiceps*), 508.  
*pygmaeus* (*Simorhynchus*), 601, 603, 604, 605.  
*pygmaea* (*Alca*), 603.  
*pygmaea* (*Phaleris*), 603.  
*pygmaeus* (*Carbo*), 403, 406.  
*Pygopodes*, 485.  
*Pygoscelis*, 624, 630.  
*Pygoscelis*, 630.  
*pyrenæus* (*Colymbus*), 507.  
*pyrrhops* (*Platalea*), 45.  
*Qua Bird*, 147.  
*radiolata* (*Ardea*), 241.  
*ralloides* (*Ardea*), 202, 281.  
*ralloides* (*Ardeola*), 202, 204, 206, 207, 209, 281.  
*ralloides* (*Babulcus*), 205.  
*ralloides* (*Buphus*), 204.  
*ralloides* (*Cuculopagis*), 204.  
*ralloides* (*Herodias*), 281.  
*ralloides* (*Nycticorax*), 204.  
*raptensis* (*Carbo*), 343.  
*rara* (*Lamprolaima*), 266.  
*Raven, Night*, 146.  
*Razor-bill*, 565.  
*Razor-billed Auk*, 568.  
*rectirostris* (*Ardea*), 68.  
*rectirostris* (*Typhos*), 69.  
*recurvirostris* (*Podiceps*), 533.  
*Red-backed Pelican*, 474.  
*Red-bellied Grebe*, 553.  
*Red Curlew*, 41.  
*Red-faced Cuckoo*, 358.  
*Red-faced Shag*, 357.  
*Red-footed Pigeon*, 635.  
*Red-legged Heron*, 204.  
*Red-necked Grebe*, 559, 542.  
*Red-shouldered Heron*, 82.  
*Red-tailed Tropic Bird*, 452.



**Red-throated Diver**, 488.  
**Reddish Egret**, 106.  
**regia** (Platalea), 43, 47, 48.  
**religiosa** (Ibis), 4, 7, 8.  
**religiosus** (Geronticus), 5.  
**religiosus** (Thresciornis), 5.  
**resplendens** (Phalacrocorax), 360, 361, 362, 381.  
**rex** (Aptenodytes), 628.  
**rex** (Balæniceps), 287.  
**rhodinopterus** (Tantalus), 327.  
**Rhynchochasma**, 306.  
**rhyngvia** (Uria), 576.  
**ridgwayi** (Falcinellus), 87.  
**ridgwayi** (Plegadis), 29, 37, 266.  
**riedeli** (Ardetta), 243.  
**Ringed or Bridled Guillemot**, 575.  
**ringeri** (Demiegretta), 140.  
**ringvia** (Catarractes), 576.  
**ringvia** (Lomvia), 576.  
**ringvia** (Uria), 572, 575.  
**robinsoni** (Butorides), 279.  
**robusta** (Ardea), 69.  
**robusta** (Typhon), 69.  
**robustus** (Phalacrocorax), 361, 362.  
**rodopteron** (Tantalus), 324, 325.  
**rodopteron vel leucocephalus** (Tantalus), 324.  
**rolland** (Podiceps), 526.  
**rollandi** (Podiceps), 525, 526.  
**rollandi** (Podicipes), 504, 506, 526.  
**Rollandia**, 503.  
**Rose-coloured Pelican**, 466.  
**rosea** (Platalea), 54.  
**Roseate Spoonbill**, 53.  
**roseus** (Pelecanus), 461, 464, 465, 466.  
**rostratus** (Podiceps), 546.  
**Rotch**, 570.  
**rothschildi** (Phalacrocorax), 385.  
**Rough-billed Pelican**, 482.  
**ruber** (Eudocimus), 41, 42, 267.  
**ruber** (Falcinellus), 42.

**ruber** (Tantalus), 41.  
**rubra** (Guara), 42, 267.  
**rubra** (Ibis), 41.  
**rubra** (Scolopax), 41.  
**rubricauda** (Phaëthon), 450, 451, 455, 459, 656.  
**rubricauda** (Phoenicurus), 452.  
**rubricaudatus** (Phaëton), 452.  
**rubricollis** (Colymbus), 540.  
**rubricollis major** (Podiceps), 542.  
**rubricollis** (Podiceps), 540, 542.  
**rubripeda** (Sula), 432.  
**rubripes** (Sula), 432.  
**rufa** (Ardea), 62, 106, 107, 108.  
**rufa** (Demiegretta), 107.  
**rufa** (Dichromanassa), 106, 107, 108, 271.  
**rufa** (Hydranassa), 107.  
**rufa** (Scolopax), 30.  
**rufescens** (Ardea), 106, 271.  
**rufescens** (Egretta), 107.  
**rufescens** (Herodias), 107.  
**rufescens** (Pelecanus), 460, 461, 467, 472, 474.  
**ruficapilla** (Ardea), 214.  
**ruficollis** (Ardea), 128, 274.  
**ruficollis** (Demiegretta), 127.  
**ruficollis** (Egretta), 127.  
**ruficollis** (Herodias), 127.  
**ruficollis** (Hydranassa), 127, 274.  
**ruficollis** (Podiceps), 540.  
**ruficristata** (Ardea), 215.  
**ruficristata** (Bubulcus), 215.  
**rufipectus** (Podiceps), 523.  
**rufipectus** (Podicipes), 504, 506, 523.  
**rufipectus** (Polioccephalus), 523.  
**rufiventris** (Ardea), 200.  
**rufiventris** (Ardeola), 201.  
**rufiventris** (Butorides), 201.  
**rufiventris** (Erythrocnus), 200, 201.  
**rufogularis** (Colymbus), 489.

**rufipectus** (Podiceps), 523.  
**Rufous-breasted Grebe**, 529.  
**Rufous Heron**, 61.  
**Rufous-winged Darter**, 412.  
**rufus** (Falcinellus), 32.  
**rufus** (Plotus), 410, 411, 412.  
**ruppellii** (Leptoptilus), 32.  
**russata** (Ardea), 214, 217.  
**russata** (Ardeola), 215.  
**russata** (Egretta), 214, 217.  
**russata** (Erodias), 215.  
**russata** (Herodias), 215.  
**russatus** (Bubulcus), 215.  
**russatus** (Buphus), 214.  
**rutenbergi** (Ardea), 173, 174.  
**sacer** (Ibis), 5.  
**sacra** (Ardea), 116, 137, 138, 139, 140.  
**sacra** (Demiegretta), 187, 140, 141, 274, 278.  
**sacra** (Herodias), 139.  
**sacra** (Ibis), 30.  
**Sacred Heron**, 137.  
**Sagmatorrhina**, 611.  
**salmoni** (Botaurus), 197.  
**salmoni** (Tigrisoma), 194, 197, 281.  
**saltator** (Eudypetes), 637.  
**salvadorii** (Colymbus), 550.  
**sarmientonus** (Graculus), 388.  
**sarmientonus** (Phalacrocorax), 388.  
**saturatus** (Butorides), 187, 188.  
**Savacou de Cayenne**, 163.  
**Savakou hupé de Cayenne**, 163.  
**Saw-billed Pelican**, 480, 481.  
**scapularis** (Ardea), 173, 175, 177, 181.  
**scapularis** (Ardetta), 175.  
**scapularis** (Butorides), 175.  
**scapularis** (Egretta), 175.  
**scapularis** (Gryllo), 584.  
**scapularis** (Uria), 582, 584.  
**scapulatus** (Butorides), 175.



- Scarlet Ibis, 41.  
*schistacea* (Ardea), 114, 115.  
*schistacea* (Egretta), 115.  
*schistacea* (Herodias), 114.  
*schistacea* (Leptorodas), 114.  
*schlegeli* (Catarrhactes), 635, 639, 643.  
*schlegeli* (Eudytes), 643.  
*schrenckii* (Butorides), 182.  
*schleri* (Catarrhactes), 635, 640.  
*schleri* (Eudytes), 640.  
 Schavonian Grebe, 529.  
*schelus* (Policeps), 529.  
*Scopus*, 288.  
*scopus* (Cepphus), 289.  
*Scotus*, 145.  
*semirufa* (Ardea), 201.  
 Senegal Bittern, 203.  
 Senegal Jabiru, 313.  
*senegalensis* (Ardea), 204.  
*senegalensis* (Ciconia), 313.  
*senegalensis* (Ephippiorhynchus), 312, 313.  
*senegalensis* (Mycteria), 312.  
*senegalensis* (Xenorhynchus), 313.  
*senecala* (Uria), 596.  
 septentrionalis (Mormon), 620.  
 septentrionalis (Cepphus), 489.  
 septentrionalis (Colymbus), 489, 187, 636.  
 septentrionalis (Eudytes), 489.  
 septentrionalis (Mergus), 489.  
 septentrionalis (Urnator), 489.  
*serrator* (Dysporus), 428.  
*serrator* (Pelecanus), 428.  
*serrator* (Sula), 424, 428.  
*serresiana* (Eudiptula), 637.  
*serresiana* (Microdptes), 637.  
*sexsetacea* (Ardea), 131, 147.  
 Shag, 365.  
 Shag, African, 407.  
 Shag, Carunculated, 364.  
 Shag, Chinese, 343.  
 Shag, Common, 364.  
 Shag, Crested, 364.  
 Shag, Dwarf, 405.  
 Shag, Magellanic, 338.  
 Shag, New Holland, 343.  
 Shag or Green Cormorant, 366.  
 Shag, Pied, 394.  
 Shag, Red-faced, 357.  
 Shag, Spotted, 354.  
 Shag, Tufted, 385.  
 Shag, Violet, 358.  
*sharpes* (Pelecanus), 462.  
*sharpes* (Pelecanus), 461, 462.  
*shemona* (Ardea), 77.  
*sibilatrix* (Ardea), 170.  
*sibilatrix* (Buphus), 170.  
*sibilatrix* (Nycticorax), 170.  
*sibilatrix* (Syringina), 170.  
*sinorhynchus*, 541, 600.  
*sinensis* (Ardea), 227, 228, 237.  
*sinensis* (Ardeola), 228.  
*sinensis* (Ardetta), 221, 222, 227, 228, 237, 243, 283.  
*sinensis* (Botaurus), 228.  
*sinensis* (Graculus), 344.  
*sinensis* (Hydrocorax), 343.  
*sinensis* (Ibis), 15.  
*sinensis* (Pelecanus), 340.  
*sinensis* (Phalacrocorax), 343.  
*sinensis* (Sula), 438.  
 Small Bittern, 186.  
 Small Black and White Diver, 569.  
*snowi* (Cepphus), 588.  
*snowi* (Uria), 573, 588.  
 Snowy Heron, 119.  
 Soco, 73.  
*soco* (Ardea), 194.  
 Solid Gannet, 426.  
*spadicea* (Ardea), 251.  
*sparmanni* (Ardea), 159.  
*Spatherda*, 43.  
 Spatule, 44.  
 Spatule blanche de l'isle de Luçon, 49.  
 Spatule couleur de rose, 52.  
 Spatule couleur de rose de Cayenne, 52.  
 Spatule hupée de l'isle de Luçon, 49.  
 Spatule rouge, 52.  
*speciosa* (Ardea), 212.  
*speciosa* (Ardeola), 202, 212.  
*speciosa* (Buphus), 212.  
 Speckled Diver, 489.  
 Speckled Diver or Loon, 494.  
*Spheniscidae*, 623.  
*Spheniscus*, 623, 625, 648.  
*sphenorhyncha* (Abdunia), 293.  
*Sphenorhynchus*, 292.  
*spiniollis* (Carphobis), 11.  
*spiniollis* (Geronticus), 11.  
*spiniollis* (Ibis), 11.  
*spodiogaster* (Butorides), 172, 182, 278.  
 Spoonbill, 46.  
 Spoonbill, Roseate, 53.  
 Spoonbill, White, 45.  
 Spotted Booby, 163.  
 Spotted Booby, 425.  
 Spotted Greenland Dove, 580.  
 Spotted Heron, 147, 234.  
 Spotted Stag, 354.  
 Spotted Heron, 217, 204.  
*squatota* (Ardea), 204.  
 Squatta Heron, 203.  
*squatinus* (Carbo), 377.  
*stagnatus* (Ardea), 183.  
*stagnatus* (Ardea), 184.  
*stagnatus* (Ardetta), 183.  
*stagnatus* (Butorides), 172, 182, 183, 184, 278, 280.  
 Starling, Crested, 601.  
 Stenopodes, 329.  
*stellaris* (Ardea), 254, 255, 288.  
*stellaris* (Botaurus), 253, 254, 256, 258, 259, 261, 285.  
*stellaris* (Butor), 255.  
*stellaris* (Nycticorax), 255.  
*stellatus* (Cepphus), 489.  
*stellatus* (Colymbus), 478.  
*stellatus* (Mergus), 489.  
*stewarti* (Phalacrocorax), 334, 338, 385.

- Sticticarbo**, 331.  
**Stictocarbo**, 331.  
**stictocephalus** (*Graculus*), 377.  
**stictocephalus** (*Microcarbo*), 377.  
**stictocephalus** (*Phalacrocorax*), 377.  
**Stonecracker Penguin**, 636.  
**Stork, American**, 297.  
**Stork, Black**, 303.  
**Stork, Common**, 299.  
**Stork, White**, 299.  
**striata** (*Ardea*), 173, 175, 178, 184, 278.  
**striata** (*Butorides*), 172, 175, 176, 279.  
**Striated Heron**, 175.  
**striatus** (*Colymbus*), 494.  
**striatus** (*Mergus*), 495.  
**striatus** (*Ocniscus*), 176.  
**striatus** (*Urinator*), 489.  
**stricticollis** (*Ibis*), 10.  
**strictipennis** (*Geronticus*), 10.  
**strictipennis** (*Ibis*), 10.  
**strictipennis** (*Threskiornis*), 10.  
**Striped Diver**, 494.  
**strumosa** (*Fregata*), 445.  
**sturmi** (*Ardea*), 173, 244.  
**sturmi** (*Ardeiralla*), 245.  
**sturmi** (*Ardeirallus*), 244, 245.  
**sturmi** (*Ardeola*), 245.  
**sturmi** (*Ardetta*), 173, 244.  
**sturmi** (*Botaurus*), 245.  
**sturmi** (*Herodias*), 173.  
**sturmii** (*Butorides*), 245.  
**sturmii** (*Herodias*), 245.  
**subcormoranus** (*Phalacrocorax*), 344.  
**subcristatus** (*Colymbus*), 539.  
**subcristatus** (*Podiceps*), 540, 542.  
**subcristatus**, var. *major* (*Podiceps*), 542.  
**subralloides** (*Ardea*), 204.  
**suckleyi** (*Cerorhina*), 610.  
**suckleyi** (*Sagmatorrhina*), 610.  
**Sula**, 423.  
**sula** (*Dysporus*), 437.  
**sula** (*Morus*), 436.  
**sula** (*Pelecanus*), 436.  
**sula** (*Sula*), 423, 424, 436, 438, 440, 655.  
**Sularius**, 423.  
**sulcirostris** (*Carbo*), 376.  
**sulcirostris** (*Graculus*), 376.  
**sulcirostris** (*Halieus*), 376.  
**sulcirostris** (*Microcarbo*), 377.  
**sulcirostris** (*Phalacrocorax*), 334, 338, 376.  
**Sulidæ**, 329, 423.  
**sumatrana** (*Ardea*), 66, 68, 70, 268.  
**sumatrana** (*Typhon*), 69.  
**sundevalli** (*Butorides*), 172, 185, 280.  
**superciliata** (*Phaleris*), 602.  
**superciliosa** (*Mormon*), 603.  
**superciliosa** (*Phaleris*), 602.  
**svarbag** (*Lomvia*), 579.  
**svarbag** (*Uria*), 577.  
**Sylbeocyclus**, 553.  
**sylvatica** (*Ibis*), 25.  
**Synthliborhamphus**, 561, 595.  
**Syrictor**, 170.  
**Syrgima**, 58, 170.  
**syrmatophora** (*Ardea*), 99.  
**syrmatophora** (*Egretta*), 99.  
**syrmatophorus** (*Herodias*), 98.  
**Tachybaptus**, 503.  
**Tachypetes**, 442.  
**taczanowskii** (*Podiceps*), 538.  
**taczanowskii** (*Podicipes*), 504, 505, 506, 538.  
**tæniata** (*Aptenodytes*), 631.  
**tæniata** (*Pygoscelis*), 630, 631, 633, 640.  
**tæniatus** (*Pygosceles*), 631.  
**tæniatus** (*Pygoscelis*), 631.  
**Tantalides**, 29, 321.  
**Tantalinae**, 321.  
**Tantalops**, 321.  
**Tantalus**, 321.  
**Tantalus de Macé**, 7.  
**tarayensis** (*Botaurus*), 255.  
**tayazu-guira** (*Ardea*), 155.  
**tayazu-guira** (*Nycticorax*), 145, 155, 275.  
**telfairii** (*Platalea*), 49.  
**temmincki** (*Alca*), 598.  
**temmincki** (*Brachyramphus*), 596, 598.  
**temmincki** (*Brachyramphus*), 598.  
**temmincki** (*Nipponia*), 15.  
**temmincki** (*Synthliborhamphus*), 598.  
**temmincki** (*Typhon*), 69.  
**tenuirostris** (*Graculus*), 353.  
**tenuirostris** (*Platalea*), 49.  
**tetracula** (*Alca*), 601.  
**tetracula** (*Phaleris*), 601.  
**tetracula** (*Uria*), 601.  
**tetraculus** (*Simorhynchus*), 602.  
**thagus** (*Onocrotalus*), 480.  
**thagus** (*Pelecanus*), 461, 480, 482.  
**thalassina** (*Ardea*), 173.  
**thalassina** (*Ardetta*), 173, 178.  
**thalassina** (*Egretta*), 173.  
**thalassina** (*Herodias*), 173.  
**thalassina** (*Ibis*), 36.  
**thalassinus** (*Falcinellus*), 36.  
**Thaumatibis**, 14.  
**thayus** (*Pelecanus*), 480.  
**Theristicus**, 3, 21.  
**thomensis** (*Colymbus*), 553.  
**thomensis** (*Podiceps*), 553.  
**Threskiornis**, 4.  
**Thula**, 124.  
**thula** (*Ardea*), 95, 101.  
**thulæ** (*Garzetta*), 125.  
**Tiger Bittern**, 194.  
**tigrina** (*Ardea*), 194, 196.  
**tigrinum** (*Tigrisoma*), 194, 198.  
**Tigriornis**, 281.  
**Tigrisoma**, 59, 193.  
**Tigrornis**, 59, 191, 281.  
**timoriensis** (*Ardea*), 98.  
**timoriensis** (*Herodias*), 90, 98, 270.

- Tippet Grebe, 544.  
 Torda, 562.  
 torda (Alca), 559, 565, 569.  
 torda (Okenalopez), 567.  
 torda (Pingouin), 568.  
 torda (Pinguinus), 568.  
 torda (Utamania), 568.  
 torquata (Aptenodytes), 624, 625.  
 torquata (Ardea), 175.  
 torquata (Chrysocoma), 624.  
 torquatus adamsi (Colymbus), 501.  
 torquatus (Cephus), 498.  
 torquatus (Colymbus), 498.  
 torquatus, var. adamsi (Colymbus), 501.  
 torra (Ardea), 91.  
 torra (Herodias), 92, 99, 270.  
 townsendi (Carbo), 363.  
 townsendi (Graculus), 363.  
 townsendi (Phalacrocorax), 363, 381.  
 townsendi (Uria), 590.  
 trachyrhynchus (Cyrtopelicanus), 482.  
 trachyrhynchus (Pelecanus), 482.  
 tricolor (Ardea), 126, 128, 274.  
 tricolor (Hydranassa), 126, 127, 128, 273.  
 tricolor (Podiceps), 517.  
 tricolor (Podiceps), 503, 505, 517.  
 tricolor (Sylboecylus), 517.  
 trifasciatus (Spheniscus), 652.  
 troile (Alca), 574, 576, 579.  
 troile arra (Alca), 579.  
 troile brunnicchi (Alca), 579.  
 troile californica (Alca), 575.  
 troile californica (Lomvia), 575.  
 troile californica (Uria), 574.  
 troile (Colymbus), 573.  
 troile leucophthalmus (Uria), 575.  
 troile (Lomvia), 574.  
 troile (Uria), 569, 572, 573, 576, 578, 579, 617.  
 troile, var. brunnicchi (Uria), 579.  
 troile, var. californica (Lomvia), 574.  
 troile, var. ringvia (Uria), 575, 576.  
 troille (Cataractes), 574.  
 troille (Uria), 577.  
 Tropic bird, 329.  
 Tropic Bird, Black-billed, 452.  
 Tropic Bird, Common, 457.  
 Tropic Bird, New Holland, 452.  
 Tropic Bird, Red-tailed, 452.  
 Tropic Bird, White, 453.  
 Tropic Bird, Yellow, 455.  
 Tropic Bird, 453, 456.  
 Tropicophilus, 450.  
 Tufted Auk, 612.  
 Tufted Shag, 385.  
 Tufted Umbre, 288.  
 tupinambis (Plotus), 420.  
 Tylorampus, 600.  
 Typhon, 66.  
 typhou (Ardea), 68.  
 typus (Anastomus), 307.  
 typus (Gornachus), 166.  
 umbellata (Oiconia), 294.  
 umbellata (Sphenorhynchus), 295.  
 Umbra, Tufted, 288.  
 umbretta (Scopus), 288.  
 umizusume (Alca), 597.  
 umizusume (Brachyrhynchus), 598.  
 umizusume (Synthliborhynchus), 598.  
 umizusume (Uria), 598.  
 undina (Aptenodytes), 646.  
 undina (Eudiptes), 646.  
 undina (Eudiptula), 646.  
 undina (Spheniscus), 646.  
 undulata (Ardea), 241.  
 undulata (Zebrius), 241.  
 undulatum (Tigrisoma), 241.  
 undulatus (Botanrus), 241.  
 unicolor (Uria), 582.  
 unisulcata (Alca), 565.  
 Uria, 560, 561, 572.  
 Urile, 831.  
 urile (Graculus), 357.  
 urile (Hydrocorax), 357.  
 urile (Pelecanus), 357, 358.  
 urile (Phalacrocorax), 357, 358, 360.  
 Uriorator, 486.  
 urinator (Colymbus), 544.  
 urinator (Podiceps), 544.  
 Utamania, 564.  
 variegata (Ardea), 62, 234, 235.  
 variegata (Sula), 424, 431.  
 variegatus (Dysporus), 434.  
 varius (Graculus), 395, 397.  
 varius (Hydrocorax), 394.  
 varius (Hypoleucus), 395.  
 varius (Pelecanus), 394.  
 varius (Phalacrocorax), 331, 335, 338, 394, 397.  
 veranii (Ardea), 214.  
 verrani (Buphus), 215.  
 verrucosus (Halaeus), 392.  
 verrucosus (Hydrocorax), 393.  
 verrucosus (Phalacrocorax), 335, 339, 391, 393.  
 vetula (Oiconia), 320.  
 victoris (Erodia), 91.  
 vinaceigula (Ardea), 271.  
 vinaceigula (Melanophox), 104, 105, 271.  
 vigua (Hydrocorax), 378.  
 vigua mexicanus (Phalacrocorax), 381.  
 vigua (Phalacrocorax), 331, 334, 338, 378, 379, 380.  
 violacea (Ardea), 131, 134.  
 violacea (Nyctanassa), 130, 274.  
 violacea (Nyctiardea), 131.

- violaceus bairdi* (Phalacrocorax), 361.  
*violaceus* (Graculus), 358, 360.  
*violaceus* (Hydrocorax), 358.  
*violaceus* (Nycterodius), 181.  
*violaceus* (Nyctherodius), 181.  
*violaceus* (Nycticorax), 131, 134, 274.  
*violaceus* (Pelecanus), 338.  
*violaceus* (Phalacrocorax), 358, 361.  
*violaceus resplendens* (Phalacrocorax), 361.  
Violet Corvorant, 358.  
Violet Heron, 294.  
Violet Shag, 358.  
*virescens* (Ardea), 181, 186, 187, 280.  
*virescens* (Ardetta), 186.  
*virescens* (Butorides), 172, 175, 181, 186, 187, 188, 279, 280.  
*virescens* (Egretta), 177, 186.  
*virescens* (Herodias), 186.  
*virescens* (Ocniscus), 187.  
*viridiceps* (Ardea), 183.  
*viridis* (Numenius), 30.  
*viridis* (Tantalus), 30.  
*vittatus* (Catarrhactes), 638.  
*vittatus* (Eudypetes), 638.  
*vulgaris* (Ardea), 77.  
*vulgaris* (Carbo), 340.  
*vulgaris* (Colymbus), 539.  
*vulgaris* (Nycticorax), 147.  
*vulgaris* (Sula), 425.  
*wagleri* (Pygocaelis), 631.  
*wardi* (Ardea), 80, 269.  
*websteri* (Sula), 635.  
Whimbrel, Brazilian, 35.  
White and Black Diver, 569.  
White and Brown Booby, 428.  
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White Curlew, 39.  
White-fronted Heron, 109.  
White Guillemot, 581.  
White-headed Frigate Pelican, 443.  
White-headed Ibis, 324.  
White Ibis, 39.  
White-necked Ibis, 23.  
White Pelican, 463, 482.  
White Pelican, Great, 462.  
White Spoonbill, 45.  
White Stork, 299.  
White Tropic Bird, 453.  
White-winged Grebe, 520.  
White-winged Guillemot, 582.  
*widhalmi* (Podiceps), 546.  
Willock, 574.  
Wood Ibis, 322.  
Wood Pelican, 321.  
*woodfordi* (Ardeiralla), 252.  
*woodfordi* (Erythrophox), 252, 253.  
Woolly Penguin, 628.  
*wrangeli* (Brachyrhamphus), 590.  
*wrangeli* (Brachyrhamphus), 591, 592.  
*wrangelli* (Brachyrhamphus), 591.  
*wringaria* (Uria), 576.  
*wumizusume* (Alca), 598.  
*wumizusume* (Brachyrhamphus), 598.  
*wumizusume* (Brachyrhamphus), 598.  
*wumizusume* (Synthliboramphus), 598.  
*wumizusume* (Synthliboramphus), 595, 598.  
*wumizusume* (Uria), 598.  
*wurdemanni* (Ardea), 80, 83, 269.  
*wurmizusume* (Synthliboramphus), 598.  
Xanthocnus, 246.  
*xanthodactyla* (Ardea), 119.  
*xanthopoda* (Ardea), 272.  
*xanthopoda* (Egretta), 272.  
*xanthopoda* (Herodias), 272.  
*Xenorhynchus*, 292, 310.  
Yellow-crowned Heron, 131.  
Yellow-necked Heron, 247.  
Yellow Tropic Bird, 455.  
Zebrilus, 59, 241.  
*zeledoni* (Oanchroma), 164.  
*zeledoni* (Cancroma), 163, 165.  
*zeledoni* (Cochlearius), 164.  
Zigzag Bittern, 241.  
*Zonocodius*, 59, 192.

END OF THE TWENTY-SIXTH VOLUME.

## LIST OF PLATES.

---

|                                                    |                         |
|----------------------------------------------------|-------------------------|
| <i>Phoyx manillensis</i> , p. 63 . . . . .         | Pl. I.                  |
| <i>Melanophoyx vinaceigula</i> , p. 271 . . . . .  | Pl. I a.                |
| <i>Notophoyx aruensis</i> , p. 272 . . . . .       | Pl. I b.                |
| <i>Nyctanassa pauper</i> , p. 274 . . . . .        | Pl. I c.                |
| <i>Butorides spodiogaster</i> , p. 182 . . . . .   | Pl. II.                 |
| <i>Tigrisoma bahia</i> , p. 281 . . . . .          | Pl. II a.               |
| <i>Dupetor nesophilus</i> , p. 250 . . . . .       | Pl. III. fig. 1.        |
| <i>Dupetor melas</i> , p. 251 . . . . .            | Pl. III. fig. 2.        |
| <i>Erythrophoyx woodfordi</i> , p. 252 . . . . .   | Pl. IV.                 |
| <i>Erythrophoyx prætermissa</i> , p. 253 . . . . . | Pl. V.                  |
| <i>Phalacrocorax stewarti</i> , p. 385 . . . . .   | Pl. V a.                |
| <i>Pelecanus thagus</i> , p. 480 . . . . .         | Pl. V b.                |
| <i>Phaëthon indicus</i> , p. 459 . . . . .         | Pl. VI.                 |
| <i>Podiceps capensis</i> , p. 513 * . . . . .      | { Pl. VII.<br>Pl. VIII. |

---

\* *Tachybaptus capensis* and *T. albipennis* on Plates.



J. K. S. 1877

Western Bros. Chromo.

*Phalaropus lobatus.*





*Melanophoxr vinaxigula.*



## LIST OF PLATES.

---

|                                                   |                         |
|---------------------------------------------------|-------------------------|
| <i>Phoyx manillensis</i> , p. 63 .....            | Pl. I.                  |
| <i>Melanophoyx vinaceigula</i> , p. 271 .....     | Pl. I A.                |
| <i>Notophoyx aruensis</i> , p. 272 .....          | Pl. I B.                |
| <i>Nyctanassa pauper</i> , p. 274 .....           | Pl. I C.                |
| <i>Butorides spodiogaster</i> , p. 182 .....      | Pl. II.                 |
| <i>Tigrisoma bahia</i> , p. 281 .....             | Pl. II A.               |
| <i>Dupetor nesophilus</i> , p. 250 .....          | Pl. III. fig. 1.        |
| <i>Dupetor melas</i> , p. 251 .....               | Pl. III. fig. 2.        |
| <i>Erythrophoyx woodfordi</i> , p. 252 .....      | Pl. IV.                 |
| <i>Erythrophoyx prætermissa</i> , p. 253 .. . . . | Pl. V.                  |
| <i>Phalacrocorax stewarti</i> , p. 385 .....      | Pl. V A.                |
| <i>Pelecanus thagus</i> , p. 480 .....            | Pl. V B.                |
| <i>Phaethon indicus</i> , p. 459 .....            | Pl. VI.                 |
| <i>Podiceps capensis</i> , p. 513 * . . . . .     | { Pl. VII.<br>Pl. VIII. |

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*Phalaropus macrurus*





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Plate A. - 1875. - 1876.

1



*Notophox aruensis.*





*Nyctanassa pauper.*







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*Butorides podiceps*





*Tigrisoma bahue.*

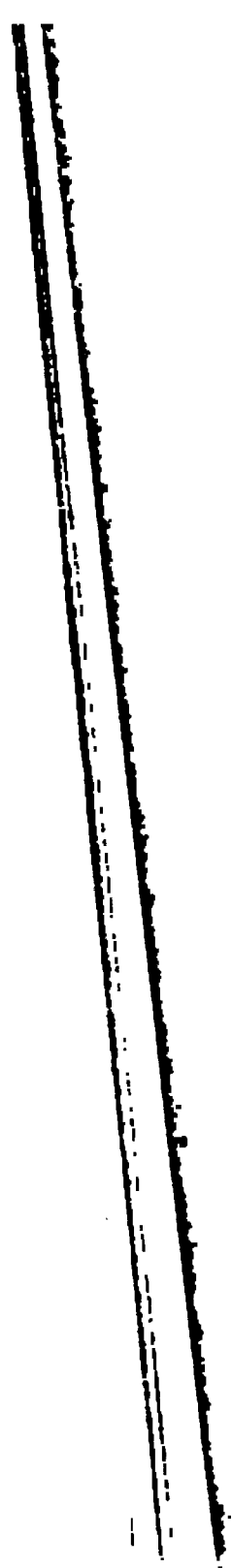




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Illustration by J. S. S. S.

*Pythreophora pratermissa*

Plate V. No. 12





*Phalacrocorax stewarti*

Mounting by J. H. S. 1911





Re. Linnæus - 30, et 101

*Pelecanus thagus*





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11

12

13

14



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Part I. Thallophyta—Pteridophyta. Pp. xxxviii., 179 : 17 Woodcuts and 11 Plates. [With Preface by Dr. Woodward, Alphabetical Index of Genera, Species, &c. Explanations of the Plates, &c.] 1894, 8vo. 10s.

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*(To be obtained only at the Museum.)*

**A General Guide to the British Museum (Natural History),** Cromwell Road, London, S.W. [By W. H. Flower.] With 2 Plans, 2 views of the building, and an illustrated cover. Pp. 78. 1896, 8vo. 3d.

**Guide to the Galleries of Mammalia (Mammalian, Osteological, Cetacean) in the Department of Zoology of the British Museum (Natural History).** [By A. Günther.] 5th Edition. Pp. 126. 57 Woodcuts and 2 Plans. Index. 1894, 8vo. 6d.

**Guide to the Galleries of Reptiles and Fishes in the Department of Zoology of the British Museum (Natural History).** 4th Edition. Pp. iv., 119. 101 Woodcuts. Index. 1898. 8vo. 6d.

**Guide to the Shell and Starfish Galleries (Mollusca, Echinodermata, Vermes), in the Department of Zoology of the British Museum (Natural History).** [By A. Günther.] 2nd Edition. Pp. iv., 74. 51 Woodcuts and 1 Plan. 1888, 8vo. 4d.

**A Guide to the Fossil Mammals and Birds in the Department of Geology and Palæontology in the British Museum (Natural History).** Seventh Edition. [By Henry Woodward.] Pp. xii., 103. 116 Woodcuts. [With List of Illustrations, Table of Stratified Rocks, and Index.] 1896, 8vo. 6d.

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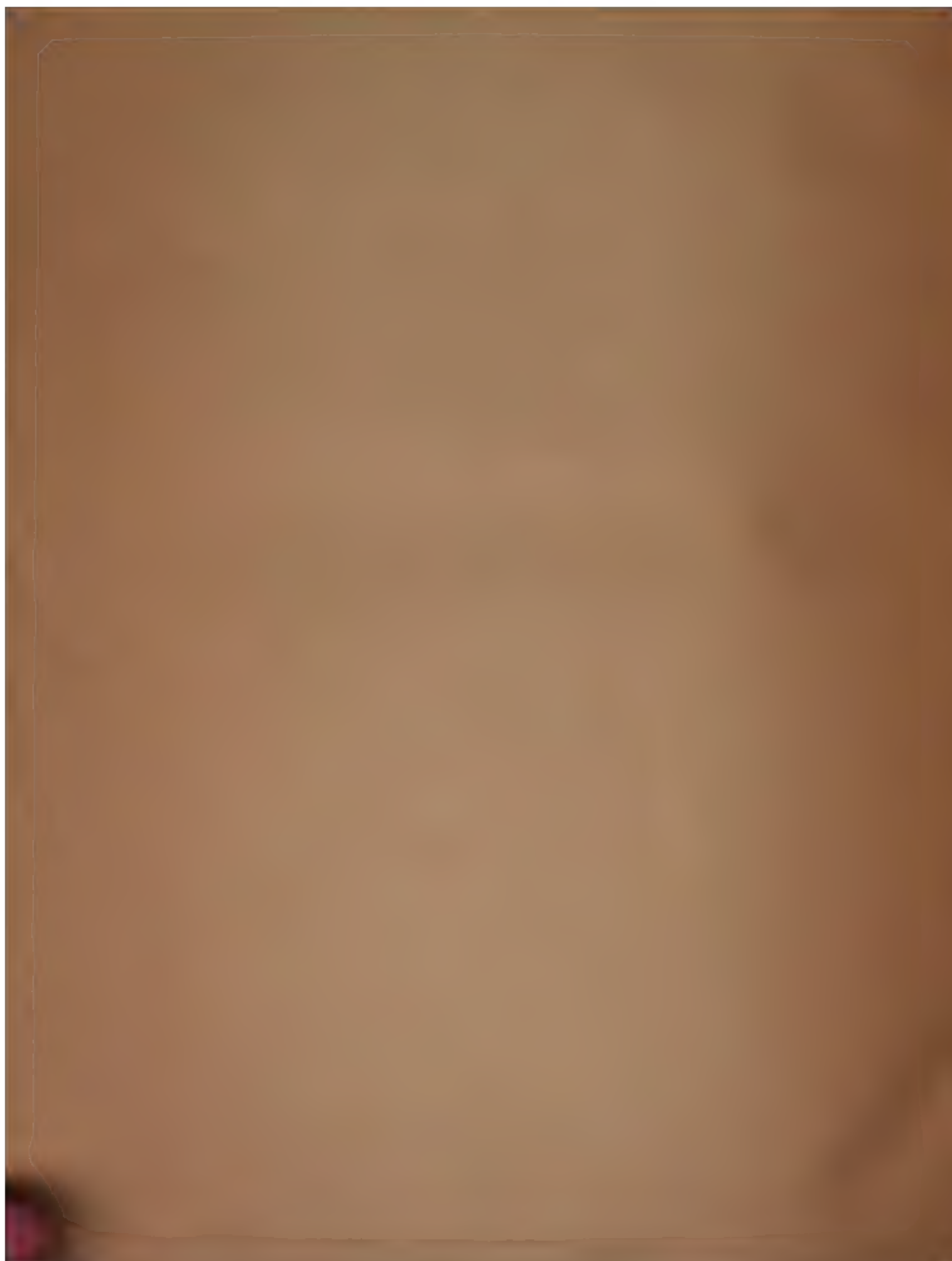
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- The same, in two parts:—
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- Guide to Sowerby's Models of British Fungi in the Department of Botany, British Museum (Natural History). By Worthington G. Smith, F.L.S. Pp. 82. 93 Woodcuts. With Table of Diagnostic Characters, and Index. 1893, 8vo. 4d.
- Guide to the British Mycetozoa exhibited in the Department of Botany, British Museum (Natural History). By Arthur Lister, F.L.S. Pp. 42. 44 Woodcuts. Index. 1895, 8vo. 3d.
- A Guide to the Mineral Gallery of the British Museum (Natural History). [By L. Fletcher, M.A., F.R.S.] Pp. 32. Plan. 1896, 8vo. 1d.
- The Student's Index to the Collection of Minerals, British Museum (Natural History). [By L. Fletcher, M.A., F.R.S.] Pp. 33. With a Plan of the Mineral Gallery. 1897, 8vo. 2d.
- An Introduction to the Study of Minerals, with a Guide to the Mineral Gallery of the British Museum (Natural History). By L. Fletcher, M.A., F.R.S. Pp. 123. 41 Woodcuts. With Plan of the Mineral Gallery and Index. 1897, 8vo. 6d.
- An Introduction to the Study of Rocks. By L. Fletcher, M.A., F.R.S. Pp. 118. [With plan of the Mineral Gallery, table of Contents, and Index.] 1896, 8vo. 6d.
- An Introduction to the Study of Meteorites, with a List of the Meteorites represented in the Collection. By L. Fletcher, M.A., F.R.S. Pp. 95. [With a Plan of the Mineral Gallery, and an Index to the Meteorites represented in the Collection.] 1896, 8vo. 6d.

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